

# SEQUENCE LISTING

<110> Ecopia BioSciences Inc  
Farnet, Chris M.  
McAlpine, James B.  
Zazopoulos, Emmanuel  
Bachmann, Brian O.  
Piraee, Mahmood

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<150> USSN 60/469,810

<151> 2003-05-13

<150> USSN 60/491,516

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 ccggcctcgc cttcgccgaa gaggccgtac ccaggctgct cgccccgttc atcgaacgcg 11700  
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 <212> PRT  
 <213> Streptomyces aizunensis

<400> 2

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 Gln Ala Val Ala Ala Leu Val Glu Glu Arg Arg Arg Ala Leu Val Val  
 35 40 45  
 Gln Arg Thr Gly Trp Gly Lys Ser Ala Val Tyr Phe Val Ala Thr Ala  
 50 55 60  
 Leu Leu Arg Arg Arg Gly Ser Gly Pro Thr Val Ile Ile Ser Pro Leu  
 65 70 75 80  
 Leu Ala Leu Met Arg Asn Gln Val Glu Ala Ala Ala Arg Ala Gly Ile  
 85 90 95  
 Gln Ala Arg Thr Ile Asn Ser Ala Asn Pro Glu Glu Trp Glu Thr Ile  
 100 105 110  
 Tyr Gly Glu Val Glu Arg Gly Glu Thr Asp Val Leu Leu Val Ser Pro  
 115 120 125  
 Glu Arg Leu Asn Ser Val Asp Phe Arg Asp Gln Val Leu Pro Lys Leu  
 130 135 140  
 Ala Ala Thr Thr Gly Leu Leu Val Val Asp Glu Ala His Cys Ile Ser  
 145 150 155 160  
 Asp Trp Gly His Asp Phe Arg Pro Asp Tyr Arg Arg Leu Arg Thr Met  
 165 170 175  
 Leu Ala Glu Leu Pro Glu Gly Val Pro Val Leu Ala Thr Thr Ala Thr  
 180 185 190  
 Ala Asn Ala Arg Val Thr Ala Asp Val Ala Glu Gln Leu Gly Thr His  
 195 200 205  
 Gly Glu His Ala Leu Val Leu Arg Gly Pro Leu Asp Arg Glu Ser Leu  
 210 215 220  
 Arg Leu Gly Val Leu Gln Leu Pro Asp Ala Ala His Arg Leu Ala Trp  
 225 230 235 240

Leu Gly Asp Arg	Leu Ala His	Leu Pro Gly	Ser Gly Ile	Ile Tyr Thr	245	250	255
Leu Thr Val Ala	Ala Ala Glu	Glu Val Ala	Ala Phe Leu	Arg Gln Arg	260	265	270
Gly Tyr Pro Val	Ala Ser Tyr	Thr Gly Lys	Thr Glu Asn	Ala Asp Arg	275	280	285
Leu Gln Ala Glu	Glu Asp Leu	Leu Ala Asn	Arg Val Lys	Ala Leu Val	290	295	300
Ala Thr Ser Ala	Leu Gly Met	Gly Phe Asp	Lys Pro Asp	Leu Gly Phe	305	310	315
Val Val His Met	Gly Ser Pro	Ser Ser Pro	Ile Ala Tyr	Tyr Gln Gln	325	330	335
Val Gly Arg Ala	Gly Arg Gly	Val Asp His	Ala Asp Val	Leu Leu Leu	340	345	350
Pro Gly Arg Glu	Asp Glu Ala	Ile Trp Ala	Tyr Phe Ala	Ser Val Gly	355	360	365
Phe Pro Pro Glu	Glu Gln Val	Arg Arg Thr	Leu Asp Val	Leu Ala Gln	370	375	380
Ala Gly Arg Pro	Leu Ser Leu	Pro Ala Leu	Glu Pro Leu	Val Asp Leu	385	390	395
Arg Arg Ser Arg	Leu Glu Thr	Met Leu Lys	Val Leu Asp	Val Asp Gly	405	410	415
Ala Val Lys Arg	Val Lys Gly	Gly Gly Trp	Thr Ala Thr	Gly Gln Pro	420	425	430
Thr Tyr Asp Ala	Glu Arg Tyr	Ala Trp Val	Ala Lys Gln	Arg Ala Ala	435	440	445
Glu Gln Gln Ala	Met Arg Asp	Tyr Val Ala	Thr Thr Gly	Cys Arg Met	450	455	460
Glu Phe Leu Gln	Arg Gln Leu	Asp Asp Glu	Lys Ala Val	Pro Cys Gly	465	470	475
Arg Cys Asp Asn	Cys Ala Gly	Ser Trp Leu	Glu Ala Val	Val Ser Pro	485	490	495
Ala Ala Leu Ala	Ala Ala Ala	Gly Glu Leu	Asp Arg Ala	Gly Val Glu	500	505	510
Val Glu Ser Arg	Lys Met Trp	Pro Thr Gly	Leu Ala Ala	Val Gly Met	515	520	525
Asp Leu Lys Gly	Arg Ile Pro	Ala Gly Gln	Gln Ala Val	Thr Gly Arg	530	535	540
Ala Leu Gly Arg	Leu Ser Asp	Ile Gly Trp	Gly Asn Arg	Leu Arg Pro	545	550	555

Leu Leu Ser Ala Gln Ala Ala Asp Gly Pro Val Pro Asp Asp Val Leu  
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 Ala Ala Val Val Thr Val Leu Ala Asp Trp Ala Arg Ser Pro Gly Gly  
 580 585 590  
 Trp Ala Ser Gly Gly Pro Asp Ala Met Ala Arg Pro Val Gly Ile Val  
 595 600 605  
 Ala Met Pro Ser Arg Thr Arg Pro Arg Leu Val Ala Ser Leu Ala Glu  
 610 615 620  
 Gly Val Ala Arg Val Gly Arg Leu Pro Leu Leu Gly Ser Leu Ala Tyr  
 625 630 635 640  
 Thr Pro Gln Ala Asp Val Tyr Gly Ala His Arg Ser Asn Ser Ala Gln  
 645 650 655  
 Arg Leu Arg Ala Leu Ala Asp Ser Phe Thr Val Pro Glu Glu Leu Ala  
 660 665 670  
 Ala Ala Leu Ala Ala Ala Pro Gly Pro Val Leu Leu Val Asp Asp Tyr  
 675 680 685  
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 <213> Streptomyces aizunensis

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<212> PRT  
<213> Streptomyces aizunensis

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Gly	Ile	Val	Asp	Ile	Gly	Ala	Tyr	Ala	Asp	Ala	Leu	Thr	Glu	Gln	Leu
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Val	Pro	Trp	Leu	Asp	Arg	Pro	Leu	Ala	Phe	Phe	Gly	His	Ser	Met	Gly
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Ala	Ile	Leu	Ala	Phe	Glu	Val	Thr	Arg	Arg	Leu	Glu	Arg	Asp	His	Gly
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Val	Thr	Pro	Glu	His	Ile	Phe	Ala	Ser	Gly	Arg	Arg	Ser	Pro	Ala	Ser
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Phe	Arg	His	Glu	Thr	Val	His	Leu	Arg	Asp	Asp	Asp	Gly	Ile	Val	Ala
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Glu	Met	Arg	Glu	Leu	Ser	Gly	Thr	Asp	Ala	Lys	Ile	Leu	Gly	Asn	Glu
145					150					155					160
Glu	Ile	Leu	Arg	Met	Val	Leu	Pro	Ala	Ile	Arg	Ser	Asp	Tyr	Thr	Ala
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Ile	Glu	Asn	Tyr	Arg	Ala	Ala	Pro	Glu	Asp	Val	Val	Arg	Thr	Pro	Ile
			180					185					190		
Thr	Val	Leu	Thr	Gly	Asp	Ala	Asp	Pro	Arg	Thr	Ser	Arg	Glu	Glu	Ala
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Asp	Ala	Trp	Lys	Ala	His	Thr	Thr	Gly	Gly	Phe	Asp	Leu	His	Ser	Phe
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Pro	Gly	Gly	His	Phe	Phe	Leu	Ala	Asn	His	Gln	Glu	Lys	Ile	Met	Gly
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Ile	Ile	Ser	Glu	Glu	Leu	Ser	Ala	Pro	Ala	Arg	Met	Ala			
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<211> 762

<212> DNA

<213> Streptomyces aizunensis

<400> 5

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cagtcgctgg ctccggcgat ggacgtcctc tcgggtccagt accccggcag gcaggaccgc 180

agggacgagc cccgggatcgt ggacatcggc gcctacgcgg acgccctgac cgagcaactc 240

gtaccgtggc tcgaccggcc cctggccttc ttcggccaca gcatgggtgc gatcctcgcc 300



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 ggaatcgtgg cggaatgcg ggaactcagc ggaaccgacg cgaagatact cggcaacgag 480  
 gaaatcctcc gcatggtgct ccccgcgatt cgaagcgact acaccgcat cgagaactac 540  
 cgtgccgcgc cggaagacgt cgtgcgtact cccatcacgg tgctgaccgg tgacgcggac 600  
 ccgaggacca gccgggaaga ggcggacgcc tggaaggcgc acacgaccgg cggattcgat 660  
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 <212> PRT  
 <213> *Streptomyces aizunensis*

<400> 6

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Ser	Gly	Ala	Val	Ala	Gly	Gly	Lys	Thr	Ser	Leu	Leu	Glu	Ile	Phe	Thr
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Glu	Glu	Ala	Ile	Ser	Ala	Gly	Ala	Leu	Val	Leu	Glu	Ala	Thr	Gly	Ser
	50					55					60				
Arg	Ala	Glu	Arg	Tyr	Leu	Pro	Phe	Gly	Ile	Leu	Arg	Arg	Ile	Leu	Asp
65					70					75					80
Ser	Ala	Ala	Pro	Leu	Ser	Pro	Glu	Ile	His	Ala	Tyr	Ala	Thr	Glu	Leu
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Leu	Asp	Arg	Val	Ser	Ala	Gly	Thr	Thr	Asp	Ala	Glu	Gly	Ala	Val	Glu
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Ala	Gly	Met	Arg	Val	Leu	Pro	His	Val	Ala	Thr	Ala	Leu	Leu	Arg	Ile
		115					120					125			
Ala	Arg	Asn	Arg	Thr	Val	Val	Ile	Ala	Ile	Asp	Asp	Val	His	His	Gly
	130					135					140				
Asp	Glu	Leu	Ser	Leu	Ala	Phe	Leu	Leu	Cys	Leu	Ala	Arg	Arg	Val	Arg
145					150					155					160
Gln	Ala	Gly	Val	Leu	Ile	Val	Leu	Thr	Glu	Ala	Val	Arg	Leu	Arg	Ser
			165						170					175	
Ala	Gln	Leu	Ala	Phe	His	Ala	Glu	Leu	Gln	Arg	Gln	Pro	Asn	Cys	Thr
		180						185					190		

Ser Leu Arg Leu Pro Leu Leu Thr Thr Arg Gly Thr Thr Arg Val Leu  
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 Ala Glu His Phe Ser Pro Ser Thr Ala Gln Arg Leu Ser Ala Glu Cys  
 210 215 220  
 Gln Glu Thr Thr Gly Gly Asn Pro Leu Leu Val Arg Ala Leu Ile Asp  
 225 230 235 240  
 Asp Gly Leu Thr Ala Leu Gly Asp Ser Glu Pro Phe Gln Arg Leu Ala  
 245 250 255  
 Pro Ala Glu Thr Phe Glu Arg Ala Val Leu Asp Cys Leu His Arg Gly  
 260 265 270  
 Asp Pro Glu Leu Leu Thr Val Ala Arg Gly Val Ala Val Leu Gly Ser  
 275 280 285  
 Ala Cys Ser Leu Ala Leu Leu Asn Gly Ile Val Asp Leu His Ala Lys  
 290 295 300  
 Ala Thr Glu Gln Ala Leu Gln Asp Leu Ser Arg Cys Ala Val Leu His  
 305 310 315 320  
 His Gly Ser Phe Arg Asp Pro Ala Ala Arg Thr Ala Val Leu Glu Ala  
 325 330 335  
 Thr Pro Pro Ala Ala Leu Ser Ala Leu His Leu Arg Thr Ala Arg Leu  
 340 345 350  
 Leu His Gln Glu Gly Ala Thr Ala Leu Asp Val Ala Arg His Leu Leu  
 355 360 365  
 Ala Ala Arg Lys Asn Val Glu Asp Trp Ala Ile Pro Val Leu Gln Glu  
 370 375 380  
 Ala Val Glu Tyr Ala Leu Val Glu Asp Glu His Glu Leu Ala Leu Arg  
 385 390 395 400  
 Cys Gly Glu Leu Ala Val Ala Ser Cys Ala Glu Gly Pro Arg His Ala  
 405 410 415  
 Ala Leu Lys Ser Arg Leu Ala Ser Ile Val Trp Arg Ser Ser Pro Ala  
 420 425 430  
 Ala Ala Glu Gly His Leu Arg Gln Leu Ser Arg Glu Leu Ala Ala Gly  
 435 440 445  
 Arg Leu Ala Asp Arg Asp Leu Val Gln Ala Val Ser Leu Leu Ala Trp  
 450 455 460  
 Met Gly Glu Ser Arg Gly Ala Gly Glu Ala Val Leu Arg Leu Gln Arg  
 465 470 475 480  
 Thr Asp Ser Glu Ala Glu Ala Ala Gly Arg Ala Pro Ala Tyr Asp Pro  
 485 490 495  
 Gly Thr Leu Thr Ala Ala Gln Ser Trp Leu Ser Met Val Ser Pro Pro  
 500 505 510

Ala	Arg	Asp	Leu	Phe	Asp	Ala	Val	Glu	Pro	Arg	Arg	Thr	Thr	Leu	Ser	515	520	525
Gly	Ala	Pro	Gly	Ala	Leu	Pro	Gly	Ala	Gly	Pro	Asp	Thr	Val	Pro	Tyr	530	535	540
Asp	Met	Pro	Asp	Asn	Ala	Tyr	Val	Gln	Ala	Ala	Asp	Ala	Val	Arg	Thr	545	550	555
Ala	Leu	Arg	Gly	Gly	Thr	Gln	Ala	Asp	Ala	Ala	Val	Ser	Lys	Ala	Thr	565	570	575
Arg	Val	Leu	Gln	Arg	Tyr	His	Leu	Ser	Asp	Arg	Thr	Leu	Gln	Pro	Leu	580	585	590
Val	Phe	Ala	Leu	Leu	Ala	Val	Ile	Tyr	Ala	Gly	Arg	Leu	Asp	Leu	Ala	595	600	605
Ser	Ala	Trp	Cys	Glu	Arg	Leu	Leu	Gly	Glu	Cys	Ser	Ala	Arg	Asn	Ala	610	615	620
Pro	Thr	Trp	Gln	Ala	Ala	Leu	Gly	Val	Val	Arg	Ala	Glu	Ile	Leu	Leu	625	630	635
Arg	Gln	Gly	Asp	Leu	Pro	Gly	Ala	Ala	Ala	Gln	Ala	Arg	His	Ala	Met	645	650	655
Ser	Arg	Ile	Ser	Leu	Gln	Ser	Trp	Gly	Val	Gly	Ile	Ala	Leu	Pro	Leu	660	665	670
Ala	Val	Leu	Val	Glu	Ala	Glu	Val	Gln	Met	Gly	Asp	His	Glu	Glu	Ala	675	680	685
Met	Ser	Leu	Leu	Glu	Gln	Pro	Val	Pro	Gln	Ala	Met	Phe	Asp	Thr	Leu	690	695	700
Ala	Gly	Leu	His	Tyr	Leu	Arg	Ala	Arg	Gly	Arg	Cys	His	Leu	Ala	Thr	705	710	715
Gly	Arg	Tyr	His	Ala	Ala	Val	Arg	Asp	Phe	Leu	Asn	Cys	Gly	Glu	Leu	725	730	735
Met	Gln	Ala	Trp	Gly	Val	Asp	Gly	Ala	Glu	Leu	Val	Pro	Trp	Arg	Leu	740	745	750
Asp	Ala	Ala	Glu	Ala	Trp	Leu	Ala	Leu	Gly	Asn	Val	Ala	Arg	Ala	Lys	755	760	765
Glu	Tyr	Thr	Glu	Gln	Gln	Lys	Gln	Arg	Glu	Thr	Gly	Pro	Val	Gly	Ser	770	775	780
Arg	Thr	Arg	Gly	Ser	Leu	Leu	Leu	Thr	Leu	Ala	His	Thr	Gly	Gly	Asp	785	790	795
Leu	Thr	Val	Arg	Leu	Lys	Arg	Leu	Val	Glu	Ala	Val	Glu	Thr	Leu	Glu	805	810	815
Glu	Gly	Gly	Asp	Arg	Leu	Gln	Leu	Ala	Val	Ala	Leu	Gly	Glu	Leu	Gly	820	825	830

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 Arg Lys Ala Trp His Val Ala Lys Ser Cys Gly Ala Glu Pro Leu Cys  
 850 855 860  
 Gln Gln Phe Met Pro Gly Gln Val Asp Gly Glu Ala Gly Ala Gln Ser  
 865 870 875 880  
 Gly Arg Glu Ala Glu Leu Pro Ser Glu Val Glu Val Leu Ser Glu Ala  
 885 890 895  
 Glu Ala Arg Val Ala Leu Leu Ala Ala Arg Gly His Thr Asn Arg Glu  
 900 905 910  
 Ile Ala Thr Lys Leu Tyr Val Thr Val Ser Thr Val Glu Gln His Leu  
 915 920 925  
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 945 950 955

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 <212> DNA  
 <213> Streptomyces aizunensis

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gaaccgctgt gccagcagtt catgccgggg caggtcgacg gcgaggccgg	tgcgcagagc	2640
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Glu Ser Asp Thr Asp Ile Leu Arg Ala Val Glu Ala Gly Ala Ala Gly  
85 90 95

Ala Ala Ala Arg Gly Glu Thr Val Leu Thr Pro Ser Leu Ala Pro Lys  
115 120 125

Arg Glu Val Leu Gln Leu Val Ser Leu Gly Leu Thr Asn Ala Asp Ile  
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Arg Ser Phe Lys Lys Leu Ser Val Ser Asp Arg Thr Ala Ala Val Ile  
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<210> 9
<211> 606
<212> DNA
<213> Streptomyces aizunensis
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<211> 416  
<212> PRT  
<213> Streptomyces aizunensis

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35 40 45  
Glu Gln Val His Arg Ala Val Ala Met Ala Ala Leu Thr Ala Ala Val  
50 55 60  
Pro Trp Tyr Ala Ala Leu Gly Arg Ser Thr Met Val His Glu Gly Gln  
65 70 75 80  
Gly Pro Val Arg Arg Ser Val Val Phe Ser Val Gly Leu Phe Val Leu  
85 90 95  
Phe Ala Val Ala Val Val Phe Asp Leu Ala Ala Ser Phe Ala Leu Phe  
100 105 110  
Ala Val Val Pro Met Leu Met Met Ser Leu Ala Thr Ser Pro Ala Ile  
115 120 125  
Ala Val Val Thr Leu Ala Asn Leu Val Pro Val Ile Val Val Trp Leu  
130 135 140  
Arg Gly Gly Thr Leu Ser Arg Asp Ile Leu Ala Val Leu Pro Thr Ser  
145 150 155 160  
Leu Leu Gly Ile Ala Leu Ser Val Met Leu Gly Leu Trp Ile Thr Arg

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Ala	Glu	Arg	Glu	Arg	Leu	Ala	Arg	Glu	Ile	His	Asp	Thr	Leu	Ala	Gln
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Thr	Ala	Asp	Pro	Asp	Arg	Ala	Arg	Ala	His	Leu	Ala	Leu	Ala	Gly	Arg
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Val	Ala	Arg	Glu	Ser	Leu	Gly	Glu	Ala	Arg	Glu	Phe	Val	Thr	Glu	Leu
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Thr	Pro	Pro	Ala	Leu	Gln	Glu	Ser	Ser	Leu	Val	Gln	Ala	Thr	Arg	Arg
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Gln	Ala	Glu	Gly	Leu	Thr	Ala	Gln	Thr	Gly	Met	Arg	Ala	His	Val	Thr
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Leu	Arg	Ser	Leu	Gln	Glu	Ala	Ile	Ala	Asn	Ile	Arg	Lys	His	Ala	Gly
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Lys	Ala	Arg	Ala	Ala	Glu	Ile	Arg	Leu	Val	Tyr	Glu	Gln	Asp	Thr	Val
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Arg	Leu	Leu	Val	Arg	Asp	Asp	Gly	Pro	Gly	Phe	Thr	Val	Thr	Gly	Asp
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Gln	Arg	Gly	Ser	Gly	Leu	Arg	Gly	Met	Gln	Thr	Arg	Ala	His	Glu	Ile
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Ser	Gly	Ala	Ala	Thr	Val	Val	Ser	Ser	Pro	Gly	Gln	Gly	Thr	Thr	Ile
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<211> 1251

<212> DNA

<213> Streptomyces aizunensis

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accgcggccg tgccttggtg cgcggccctg gggcgcagca ccatggtcca cgagggccag 240



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<212> PRT
<213> Streptomyces aizunensis

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<400> 12

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Met Leu Pro Ser Leu Leu Ala Val Val Val Ile Leu Ala Leu Leu Val
35           40           45
His Thr Leu Pro Leu Asp Gly Asn Asp Pro Ser Leu Gln Leu Ala Gly
50           55           60
Ile Gly Ala Gly Ile Ile Cys Gly Leu Ala Ala Thr Ala Leu Leu Pro
65           70           75           80
Ala His Arg Asn Ala Ser Gly Glu Val Ser Thr Lys Gly Gly Ile Gly
85           90           95

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Tyr Ala Leu Val Trp Thr Ala Leu Ser Ala Ser Arg Val Leu Phe Ala  
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 Tyr Gly Ser Gln His Trp Phe Ser Glu Gly Ile Val Arg Phe Ser Thr  
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 130 135 140  
 Met Ala Leu Ala Met Val Leu Thr Arg Thr Ala Val Leu Leu Asn Thr  
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 caactggcgg gcacgcggcg cggtatcatc tgccggactgg ccgccacggc gctcctcccc 240  
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 <212> PRT  
 <213> Streptomyces aizunensis

<400> 14

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Phe	Phe	Gly	Trp	Ala	Phe	Leu	Ile	Ser	Leu	Val	Pro	Gly	Leu	Ala	Tyr
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Met	Ala	Val	Met	Pro	Ala	Trp	Arg	Tyr	Arg	Val	His	Arg	Trp	Glu	Thr
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Thr	Asp	Glu	Ala	Val	Tyr	Ala	Ala	Ser	Gly	Trp	Leu	Trp	Gln	Gln	Trp
				85					90					95	
Arg	Val	Val	Pro	Met	Ser	Arg	Ile	Gln	Thr	Val	Asp	Thr	Leu	Arg	Gly
			100					105					110		
Pro	Leu	Gln	Gln	Leu	Phe	Gly	Leu	Ser	Gly	Ile	Thr	Val	Thr	Thr	Ala
		115					120					125			
Ser	Tyr	Ser	Gly	Ala	Val	Lys	Ile	Lys	Gly	Ile	Asp	His	Arg	Thr	Ala
	130					135					140				
Arg	Asp	Val	Val	Glu	His	Leu	Thr	Arg	Val	Thr	Gln	Ala	Thr	Pro	Gly
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Asp Ala Thr															

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 <212> DNA  
 <213> Streptomyces aizunensis

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Val Asn Leu Ser Met Leu Ala Gly Pro Leu Ala Leu Phe Ala Val Thr  
                   35                                  40                                  45

Val Ala Leu Thr Gly Ala Asn Leu Gln Ala Leu Ile Ser Leu Gly Ser  
           50                                  55                                  60

Leu Leu Ile Val Phe Leu Val Ile Thr Gly Ile Ser Thr Met Arg Leu  
   65                                  70                                  75                                  80

Leu Thr Thr Arg Phe Arg Val Thr Ala Glu Arg Val Glu Leu Arg Ser  
                   85                                  90                                  95

Gly Leu Leu Phe Arg Ser Arg Arg Ser Val Pro Ile Asp Arg Val Arg  
                   100                                  105                                  110

Ser Val Asp Val Glu Ala Lys Pro Val His Arg Leu Phe Gly Leu Ala  
           115                                  120                                  125

Ser Leu Arg Ile Gly Thr Gly Glu Gln Gly Ala Ser Ser Arg Arg Leu  
   130                                  135                                  140

Ser Leu Asp Gly Ile Thr Arg Arg Gln Ala Arg Arg Leu Arg Arg Leu  
  145                                  150                                  155                                  160

Leu Ile Asp Arg Arg Gly Ser Gly His Ala Thr Gly Gln Asp Gln Asp  
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Val Thr Ile Ala Glu Met Asp Trp Ala Trp Leu Arg Tyr Ala Pro Leu  
                   180                                  185                                  190

Thr Ile Trp Gly Val Gly Ser Val Phe Ala Ala Val Gly Thr Ala Tyr  
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Arg Ile Leu His Glu Met Lys Val Asp Pro Leu Glu Leu Gly Val Val  
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Lys Asp Ile Glu Asp Arg Phe Gly Ser Val Pro Leu Trp Phe Gly Ile  
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Leu Val Ala Val Val Ile Thr Ala Val Val Gly Ala Ala Val Ser Thr  
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Ala Thr Phe Val Asp Ala Trp Thr Asn Tyr Arg Leu Glu Arg Glu Gly  
                   260                                  265                                  270

Val Gly Ile Phe Arg Ile Arg Arg Gly Leu Leu Ile Ser Arg Ser Val  
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Thr Ile Glu Glu Arg Arg Leu Arg Gly Val Glu Leu Ala Glu Pro Met  
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Leu Leu Arg Trp Ala Gly Gly Ala Thr Leu Ser Ala Ile Ala Ser Gly  
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Leu Ser Asn Ser Gln Glu Asn Arg Ser Arg Cys Ser Leu Thr Pro Pro  
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 Glu Gly Ser Pro Thr Glu Leu Thr Lys Leu Val Arg His Ser Arg Ala  
 355 360 365  
 Ala Leu Arg Arg Arg Ile Asn Arg Gly Leu Leu Val Leu Ala Ala Val  
 370 375 380  
 Val Ala Val Pro Leu Gly Leu Gly Leu Trp Leu Thr Pro Val Leu Val  
 385 390 395 400  
 His Thr Ala Trp Ile Thr Ala Leu Val Gly Leu Pro Val Val Ile Val  
 405 410 415  
 Leu Ala Asn Asp Ala Tyr Arg Ser Leu Gly His Gly Ile Arg Asp Arg  
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 Tyr Leu Val Val Arg Ala Gly Thr Phe Ala Arg Arg Thr Val Ala Val  
 435 440 445  
 Gln Arg Asp Gly Val Ile Gly Trp Asn Ile Ser Arg Ser Tyr Phe Gln  
 450 455 460  
 Arg Arg Ser Gly Leu Leu Thr Ile Gly Ala Thr Thr Ala Gly Val Gly  
 465 470 475 480  
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Arg Gly

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 <213> Streptomyces aizunensis

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 625 630 635 640

Arg	Gly	Arg	Phe	Glu	Gln	Arg	Ala	Ile	Val	Leu	Gly	Asp	Asp	Arg	Glu	645	650	655
Ala	Phe	Leu	Asp	Ala	Leu	His	Ala	Leu	Ala	Glu	Gly	Asn	Asp	Thr	Pro	660	665	670
Ser	Val	Val	Gln	Gly	Ala	Ala	Ala	Pro	Gly	Lys	Leu	Ala	Phe	Leu	Phe	675	680	685
Thr	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	690	695	700
Thr	His	Pro	Val	Phe	Ala	Asp	Ala	Leu	Asp	Asp	Ala	Cys	Trp	Tyr	Leu	705	710	715
Asp	Asp	Gln	Leu	Glu	Leu	Pro	Leu	Leu	Asp	Val	Leu	Phe	Ala	Asp	Glu	725	730	735
Gly	Ser	Pro	Glu	Ala	Ala	Leu	Leu	His	Gln	Thr	Ala	Tyr	Thr	Gln	Pro	740	745	750
Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Val	Asp	Ser	Trp	755	760	765
Gly	Leu	Lys	Pro	Asp	Phe	Val	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	770	775	780
Ala	Ala	His	Val	Ala	Gly	Val	Phe	Ser	Leu	Glu	Asp	Ala	Cys	Met	Leu	785	790	795
Val	Ala	Ala	Arg	Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro	Ala	Gly	Gly	Val	805	810	815
Met	Ile	Ala	Leu	Gln	Ala	Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	820	825	830
Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ala	Val	Val	Ile	835	840	845
Ala	Gly	Asp	Glu	Asp	Ala	Ala	Ala	Ala	Ile	Ala	Glu	Thr	Phe	Gln	Ala	850	855	860
Ala	Gly	Arg	Lys	Thr	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser	865	870	875
Pro	His	Met	Asp	Ala	Met	Leu	Glu	Glu	Phe	Leu	Arg	Val	Ala	Gln	Val	885	890	895
Leu	Asp	Tyr	Ala	Lys	Pro	Thr	Leu	Pro	Val	Val	Ser	Leu	Leu	Thr	Gly	900	905	910
Thr	Thr	Ala	Thr	Pro	Ala	Glu	Leu	Ala	Thr	Pro	Ala	Tyr	Trp	Val	Arg	915	920	925
His	Val	Arg	Asp	Ala	Val	Arg	Tyr	Leu	Asp	Gly	Val	Arg	Thr	Leu	His	930	935	940
Gln	Arg	Gly	Val	Arg	Thr	Phe	Leu	Glu	Leu	Gly	Pro	Asp	Ala	Val	Leu	945	950	955

Thr	Ala	Met	Ala	Gln	Asp	Cys	Val	Asp	Pro	Gln	Gly	Ala	Ala	Phe	Ala	965	970	975
Pro	Ala	Leu	Arg	Ser	Gly	Arg	Pro	Glu	Ala	Ala	Thr	Val	Leu	Asn	Ala	980	985	990
Val	Ala	His	Ala	His	Val	Arg	Gly	Ala	Glu	Thr	Asp	Trp	Ala	Ala	Phe	995	1000	1005
Phe	Ala	Gly	Thr	Gly	Ala	Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Ala		1010	1015	1020
Phe	Gln	Arg	Gln	Arg	Tyr	Trp	Met	Asp	Ser	Arg	Thr	Pro	Ala	Pro		1025	1030	1035
Asp	Ser	Ala	Ala	Gln	Arg	Ala	His	Gly	Gly	Ala	Asp	Pro	Val	Asp		1040	1045	1050
Arg	Val	Phe	Trp	Asp	Ala	Val	Glu	His	Glu	Asp	Val	Ala	Thr	Leu		1055	1060	1065
Ala	Ala	Ala	Leu	Glu	Leu	Asp	Leu	Asp	Gly	Glu	Gln	Pro	Leu	Ser		1070	1075	1080
Glu	Val	Val	Pro	Ala	Leu	Ser	Ala	Trp	Arg	Arg	Arg	Arg	Arg	Thr		1085	1090	1095
Gln	Ser	Glu	Val	Asp	Gly	Trp	Arg	Tyr	Arg	Val	Thr	Trp	Lys	Pro		1100	1105	1110
Leu	Thr	Glu	Val	Ser	Thr	Ser	Gly	Leu	Ser	Gly	Ser	Trp	Val	Val		1115	1120	1125
Ile	Ser	Pro	Ala	Gly	Gly	Ala	Asp	Asp	Ser	Ala	Val	Val	Ser	Ala		1130	1135	1140
Leu	Val	Gly	Arg	Gly	Val	Asp	Val	Arg	Arg	Val	Val	Val	Glu	Ala		1145	1150	1155
Gly	Val	Asp	Arg	Ser	Ala	Leu	Ala	Gly	Leu	Leu	Ala	Glu	Val	Gly		1160	1165	1170
Ser	Pro	Ser	Gly	Val	Val	Ser	Leu	Leu	Gly	Leu	Asp	Glu	Ser	Gly		1175	1180	1185
Gly	Leu	Leu	Gly	Thr	Val	Gly	Leu	Val	Gln	Ala	Leu	Gly	Asp	Ala		1190	1195	1200
Gly	Val	Gly	Ala	Pro	Leu	Trp	Cys	Leu	Thr	Arg	Gly	Ala	Val	Ser		1205	1210	1215
Val	Gly	Arg	Ser	Asp	Arg	Leu	Val	Ser	Pro	Val	Gln	Ala	Gln	Val		1220	1225	1230
Trp	Gly	Leu	Gly	Arg	Val	Ala	Ala	Leu	Glu	Val	Pro	Glu	Trp	Trp		1235	1240	1245
Gly	Gly	Leu	Ile	Asp	Leu	Pro	Glu	Val	Leu	Asp	Glu	Arg	Ala	Val		1250	1255	1260

Ser	Arg	Leu	Val	Gly	Val	Leu	Ala	Gly	Ser	Gly	Glu	Asp	Gln	Val
1265						1270					1275			
Ala	Val	Arg	Ser	Ser	Gly	Val	Phe	Gly	Arg	Arg	Leu	Val	Arg	Ala
1280						1285					1290			
Pro	Arg	Ala	Glu	Gly	Ala	Ser	Ala	Trp	Ser	Pro	Thr	Gly	Thr	Val
1295						1300					1305			
Leu	Val	Thr	Gly	Gly	Thr	Gly	Val	Leu	Gly	Gly	Arg	Val	Ala	Arg
1310						1315					1320			
Trp	Leu	Ala	Gly	Ala	Gly	Ala	Glu	Arg	Leu	Val	Leu	Thr	Ser	Arg
1325						1330					1335			
Arg	Gly	Leu	Asp	Ala	Pro	Gly	Ala	Val	Glu	Leu	Val	Glu	Glu	Leu
1340						1345					1350			
Thr	Thr	Gly	Phe	Gly	Val	Glu	Val	Ser	Val	Val	Ala	Cys	Asp	Ala
1355						1360					1365			
Ala	Asp	Arg	Asp	Ala	Leu	Arg	Ala	Leu	Leu	Ser	Ala	Glu	Ala	Gly
1370						1375					1380			
Ser	Leu	Thr	Ala	Val	Val	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly
1385						1390					1395			
Val	Leu	Asp	Ala	Leu	Thr	Pro	Asp	Arg	Ile	Asp	Ser	Val	Val	Arg
1400						1405					1410			
Ala	Lys	Ala	Val	Ser	Ala	Leu	Asn	Leu	His	Glu	Leu	Thr	Ala	Glu
1415						1420					1425			
Leu	Gly	Ile	Glu	Leu	Ser	Asp	Phe	Val	Leu	Phe	Ser	Ser	Val	Thr
1430						1435					1440			
Gly	Thr	Val	Gly	Ala	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Asn
1445						1450					1455			
Ala	Phe	Leu	Asp	Ala	Leu	Ala	Glu	Gln	Arg	Arg	Ala	Asp	Gly	Leu
1460						1465					1470			
Ala	Ala	Thr	Ser	Ile	Ala	Trp	Gly	Pro	Trp	Ala	Glu	Gly	Gly	Met
1475						1480					1485			
Ala	Ala	Asp	Glu	Ala	Met	Asp	Ala	Arg	Met	Arg	Arg	Glu	Gly	Met
1490						1495					1500			
Pro	Pro	Met	Ala	Pro	Thr	Ser	Ala	Met	Ser	Ala	Leu	Glu	Gln	Ala
1505						1510					1515			
Val	Gly	Ala	Gly	Glu	Thr	Ala	Leu	Thr	Val	Ala	Asp	Ile	Asp	Trp
1520						1525					1530			
Glu	Arg	Phe	Ser	Ser	Val	Ile	Ala	Ala	Val	Arg	Pro	Asn	Pro	Leu
1535						1540					1545			
Ile	Gly	Asp	Phe	Val	Val	Gly	Ala	Glu	Gly	Thr	Ala	Ala	Ala	Ser
1550						1555					1560			



Gly His 1565	Gly Ser Val Val 1570	Thr Gly Ala Asp Val 1575	Ala Ala Thr Val
Ser Gly 1580	Arg Leu Ala Gly 1585	Thr Gln Ala Glu 1590	Gln Glu Arg Glu
Leu Leu 1595	Ser Leu Val Arg 1600	Leu His Val Ala Ala 1605	Val Leu Gly His
Asp Gly 1610	Ser Asp Ala Val 1615	Gly Ala Glu Arg Ala 1620	Phe Lys Glu Leu
Gly Phe 1625	Asp Ser Leu Thr 1630	Ser Val Glu Leu Arg 1635	Asn Arg Leu Gly
Ala Ala 1640	Thr Asp Leu Arg 1645	Leu Pro Thr Thr Leu 1650	Val Tyr Asp Tyr
Pro Thr 1655	Ser Ala Ala Leu 1660	Ala Glu Tyr Leu Arg 1665	Gly Glu Leu Ala
Gly Ser 1670	Ala Gln Asp Ala 1675	Gly Pro Pro Leu Pro 1680	Ala Val Val Gly
Ser Ala 1685	Ala Asp Asp Asp 1690	Pro Ile Val Ile Val 1695	Ser Met Ser Cys
Arg Phe 1700	Pro Gly Gly Val 1705	Arg Thr Pro Glu Asp 1710	Leu Trp Gln Leu
Leu Ala 1715	Asp Gly Thr Asp 1720	Thr Val Ala Ala Phe 1725	Pro Ala Asp Arg
Gly Trp 1730	Asp Leu Asp Gly 1735	Leu Tyr Ser Ala Asp 1740	Pro Glu Arg Ser
Gly Thr 1745	Ser Tyr Thr Arg 1750	Glu Gly Gly Phe Leu 1755	Tyr Asp Ala Ala
Asp Phe 1760	Asp Ala Asp Phe 1765	Phe Gly Ile Ser Pro 1770	Arg Glu Ala Leu
Ala Met 1775	Asp Pro Gln Gln 1780	Arg Leu Leu Leu Glu 1785	Thr Ala Trp Glu
Thr Phe 1790	Glu Arg Ala Gly 1795	Ile Asp Pro Ala Ser 1800	Leu Arg Gly Ser
Gln Ala 1805	Gly Val Phe Val 1810	Gly Thr Asn Gly Gln 1815	Asp Tyr Leu Ser
Leu Val 1820	Thr Arg Glu Gly 1825	Asp Gly Leu Asp Gly 1830	Leu Glu Gly His
Val Gly 1835	Thr Gly Asn Ala 1840	Ala Ser Val Val Ser 1845	Gly Arg Leu Ser
Tyr Val 1850	Phe Gly Leu Glu 1855	Gly Pro Ala Ile Thr 1860	Val Asp Thr Ala

Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Leu	Ala	Val	Gln	Ala	Leu
1865						1870					1875			
Arg	Gln	Gly	Glu	Cys	Thr	Leu	Ala	Leu	Ala	Gly	Gly	Val	Thr	Val
1880						1885					1890			
Met	Ser	Thr	Pro	Asp	Ala	Phe	Val	Asp	Phe	Ser	Arg	Gln	Arg	Gly
1895						1900					1905			
Leu	Ala	Glu	Asp	Gly	Arg	Ile	Lys	Ala	Phe	Ala	Ser	Ala	Ala	Asp
1910						1915					1920			
Gly	Thr	Gly	Trp	Gly	Glu	Gly	Val	Gly	Met	Leu	Leu	Val	Glu	Arg
1925						1930					1935			
Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Pro	Val	Leu	Ala	Val	Val
1940						1945					1950			
Arg	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala	Ser	Asn	Gly	Leu	Thr
1955						1960					1965			
Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Arg	Gln	Ala	Leu
1970						1975					1980			
Ala	Gly	Ala	Gly	Leu	Ser	Ala	Ala	Asp	Val	Asp	Ala	Val	Glu	Ala
1985						1990					1995			
His	Gly	Thr	Gly	Thr	Arg	Leu	Gly	Asp	Pro	Ile	Glu	Ala	Gln	Ala
2000						2005					2010			
Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Gly	Arg	Pro	Ala	Asp	Arg	Pro	Leu
2015						2020					2025			
Trp	Leu	Gly	Ser	Val	Lys	Ser	Asn	Ile	Gly	His	Thr	Gln	Ala	Ala
2030						2035					2040			
Ala	Gly	Val	Ala	Gly	Val	Met	Lys	Met	Val	Met	Ala	Met	Arg	His
2045						2050					2055			
Gly	Val	Leu	Pro	Arg	Thr	Leu	His	Val	Asp	Gly	Pro	Thr	Pro	His
2060						2065					2070			
Val	Asp	Trp	Ser	Ala	Gly	Asp	Val	Ala	Leu	Leu	Thr	Glu	Gln	Arg
2075						2080					2085			
Glu	Trp	Pro	Ala	Thr	Gly	His	Pro	Arg	Arg	Ala	Gly	Val	Ser	Ser
2090						2095					2100			
Phe	Gly	Leu	Ser	Gly	Thr	Asn	Ala	His	Thr	Ile	Ile	Glu	Glu	Ala
2105						2110					2115			
Pro	Ala	Asp	Asp	Asp	Ala	Glu	Pro	Thr	Thr	Gly	Ala	Gly	Thr	Ala
2120						2125					2130			
Pro	Ser	Val	Leu	Pro	Leu	Leu	Ile	Ser	Ala	Lys	Ser	Asp	Ala	Gly
2135						2140					2145			
Leu	Arg	Ala	Gln	Ser	Glu	Gln	Leu	Ala	Thr	His	Leu	Val	Gly	Asn
2150						2155					2160			

Pro	Asp	Val	Pro	Ile	Gly	Asp	Ile	Ala	Tyr	Ser	Leu	Thr	Thr	Gly
2165						2170					2175			
Arg	Ser	Gly	Leu	Glu	Thr	Arg	Ala	Ile	Leu	Val	Gly	Asp	Ala	Asp
2180						2185					2190			
Asn	Arg	Thr	Gly	Leu	Ala	Ala	Ala	Leu	Arg	Ser	Leu	Ala	Ala	Gly
2195						2200					2205			
Glu	Gln	Ala	Pro	Gly	Leu	Val	Gln	Gly	Thr	Val	Thr	Glu	Gly	Gly
2210						2215					2220			
Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met
2225						2230					2235			
Gly	Arg	Glu	Leu	Tyr	Glu	Thr	Tyr	Pro	Val	Phe	Ala	Asp	Ala	Leu
2240						2245					2250			
Asp	Ala	Val	Cys	Ala	Arg	Met	Asp	Leu	Glu	Val	Pro	Leu	Arg	Asp
2255						2260					2265			
Val	Leu	Phe	Gly	Ala	Tyr	Ala	Gly	Leu	Leu	Asp	Glu	Thr	Ala	Tyr
2270						2275					2280			
Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu
2285						2290					2295			
Val	Glu	Ser	Trp	Gly	Leu	Arg	Pro	Asp	Phe	Val	Ala	Gly	His	Ser
2300						2305					2310			
Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val	Leu	Ser	Leu
2315						2320					2325			
Asp	Asp	Ala	Cys	Ala	Leu	Val	Glu	Ala	Arg	Gly	Arg	Leu	Met	Gly
2330						2335					2340			
Ala	Leu	Pro	Gly	Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala	Pro	Glu
2345						2350					2355			
Ala	Glu	Val	Leu	Pro	Leu	Leu	Thr	Glu	Arg	Val	Ser	Ile	Ala	Ala
2360						2365					2370			
Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp
2375						2380					2385			
Ala	Val	Ala	Ile	Val	Glu	Ser	Phe	Thr	Gly	Arg	Lys	Ser	Lys	Arg
2390						2395					2400			
Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met
2405						2410					2415			
Leu	Glu	Asp	Phe	Arg	Ala	Val	Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Ala
2420						2425					2430			
Pro	Arg	Ile	Pro	Val	Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Ser
2435						2440					2445			
Asp	Glu	Met	Gly	Ser	Ala	Glu	Phe	Trp	Val	Arg	His	Val	Arg	Glu
2450						2455					2460			

Ala Val	Arg Phe Leu Asp	Gly Met Arg Val Leu	Glu Ala Ala Gly
2465		2470	2475
Val Thr	Thr Tyr Val Glu	Leu Gly Pro Gly Gly	Val Leu Ser Ala
2480		2485	2490
Leu Ala	Gln Glu Cys Val	Ser Gly Asp Gly Ala	Ala Phe Val Pro
2495		2500	2505
Val Leu	Arg Ser Gly Arg	Pro Glu Ala Glu Thr	Ala Val Thr Ala
2510		2515	2520
Leu Ala	Gln Ala His Val	Arg Gly Val Asp Val	Asp Trp Ala Ala
2525		2530	2535
Phe Phe	Ser Gly Thr Gly	Val Gln Arg Val Asp	Leu Pro Thr Tyr
2540		2545	2550
Ala Phe	Gln Arg Gln Arg	Phe Trp Pro Ala Met	Thr Ala Glu Ser
2555		2560	2565
Ala Pro	Val Gly Gly Thr	Val Asp Ala Val Asp	Ala His Phe Trp
2570		2575	2580
Asp Val	Ile Glu Gln Glu	Asp Val Glu Ser Leu	Ala Glu Leu Leu
2585		2590	2595
Gly Leu	Asp Asp Ala Ser	Ala Trp Gly Ser Val	Val Pro Ala Leu
2600		2605	2610
Ser Ala	Trp Arg Arg Gln	Gly Gln Gln Gln Ala	Gln Val Asp Gly
2615		2620	2625
Trp Arg	Tyr Arg Ala Ser	Trp Lys Pro Val Thr	Ala Ala Val Ser
2630		2635	2640
Ser Gly	Val Val Ser Gly	Thr Trp Val Val Ala	Val Pro Ala Gly
2645		2650	2655
Ser Ala	Gly Asp Asp Ala	Arg Val Glu Ala Val	Thr Asn Gly Leu
2660		2665	2670
Ala Gly	Arg Gly Val Asp	Val Arg Arg Val Val	Val Glu Ala Gly
2675		2680	2685
Val Asp	Arg Ala Ala Leu	Ala Gly Leu Leu Ala	Gly Glu Gly Ser
2690		2695	2700
Leu Ala	Gly Val Val Ser	Leu Leu Gly Leu Asp	Glu Ser Gly Gly
2705		2710	2715
Leu Ala	Ala Thr Ala Gly	Leu Val Gln Ala Leu	Gly Asp Ala Gly
2720		2725	2730
Val Ser	Ala Pro Leu Trp	Cys Leu Thr Arg Gly	Ala Val Ser Val
2735		2740	2745
Gly Arg	Ser Asp Arg Leu	Val Ser Pro Val Gln	Ala Gln Val Trp
2750		2755	2760

Gly Leu	Gly Arg Val Ala	Ala	Leu Glu Val Pro	Glu	Arg Trp Gly
2765		2770		2775	
Gly Leu	Val Asp Leu Pro	Glu	Val Leu Asp Glu	Arg	Ala Val Ser
2780		2785		2790	
Arg Leu	Ile Gly Val Leu	Ala	Gly Ser Gly Glu	Asp	Gln Val Ala
2795		2800		2805	
Val Arg	Ser Ser Gly Val	Phe	Gly Arg Arg Leu	Val	Arg Ala Pro
2810		2815		2820	
Arg Ala	Glu Gly Ala Ala	Ser	Trp Thr Pro Thr	Gly	Thr Val Leu
2825		2830		2835	
Val Thr	Gly Gly Thr Gly	Val	Leu Gly Gly Arg	Val	Ala Arg Trp
2840		2845		2850	
Leu Ala	Gly Ala Gly Ala	Glu	Arg Leu Val Leu	Thr	Ser Arg Arg
2855		2860		2865	
Gly Leu	Asp Ala Pro Gly	Thr	Ala Glu Leu Val	Glu	Glu Leu Thr
2870		2875		2880	
Ser Ser	Gly Val Glu Val	Ser	Val Val Ala Cys	Asp	Ala Ala Asp
2885		2890		2895	
Arg Asp	Ala Leu Arg Ala	Leu	Leu Ser Ser Glu	Ala	Gly Ser Leu
2900		2905		2910	
Thr Ala	Val Ile His Thr	Ala	Gly Val Leu Asp	Asp	Gly Val Leu
2915		2920		2925	
Asp Ala	Leu Thr Pro Asp	Arg	Ile Asp Gly Val	Val	Arg Ala Lys
2930		2935		2940	
Ala Val	Ser Ala Leu Asn	Leu	His Glu Leu Thr	Ala	Glu Leu Gly
2945		2950		2955	
Ile Glu	Leu Ser Ala Phe	Val	Leu Phe Ser Ser	Met	Ser Gly Thr
2960		2965		2970	
Val Gly	Thr Ala Gly Gln	Ala	Asn Tyr Ala Ala	Ala	Asn Ala Tyr
2975		2980		2985	
Leu Asp	Ala Leu Ala Glu	Gln	Arg Arg Ala Asp	Gly	Leu Ala Ala
2990		2995		3000	
Thr Ser	Ile Ala Trp Gly	Pro	Trp Ala Glu Gly	Gly	Met Ala Ala
3005		3010		3015	
Asp Ala	Ala Leu Glu Ala	Arg	Met Arg Arg Asp	Gly	Val Pro Pro
3020		3025		3030	
Met Pro	Ala Asp Pro Ala	Ile	Arg Ala Leu Arg	Gln	Ala Val Ala
3035		3040		3045	
Gly Asp	Asp Ala Val Leu	Thr	Val Ala Asp Val	Glu	Trp Asp Arg
3050		3055		3060	

Phe	Leu	Pro	Gly	Phe	Val	Ala	Ala	Arg	His	Ser	Glu	Leu	Phe	Ser
3065						3070					3075			
Glu	Leu	Arg	Asp	Val	Arg	Asp	Ala	Arg	Ala	Ala	Gln	Asp	Arg	Ala
3080						3085					3090			
Gln	Ala	Ala	Val	Ala	Ala	Asp	Arg	Pro	Asp	Ser	Leu	Ser	Gly	Arg
3095						3100					3105			
Leu	Ser	Ala	Gln	Ala	Pro	Ala	Glu	Gln	Glu	Arg	Glu	Leu	Leu	Asp
3110						3115					3120			
Leu	Val	Arg	Thr	Gln	Val	Ala	Ala	Val	Leu	Gly	His	Ala	Gly	Val
3125						3130					3135			
Glu	Asn	Val	Gly	Ala	Gly	Arg	Ala	Phe	Lys	Glu	Leu	Gly	Phe	Asp
3140						3145					3150			
Ser	Leu	Met	Ala	Val	Glu	Leu	Arg	Asn	Arg	Ile	Gly	Ser	Ala	Thr
3155						3160					3165			
Glu	Leu	Arg	Leu	Pro	Ala	Thr	Leu	Ile	Tyr	Asp	His	Pro	Thr	Ser
3170						3175					3180			
Ala	Ala	Leu	Ala	Glu	Phe	Leu	Arg	Gly	Glu	Leu	Val	Gly	Thr	Val
3185						3190					3195			
Arg	Val	Ala	Asp	Lys	Val	Leu	Pro	Ala	Val	Val	Ser	Ala	Asp	Glu
3200						3205					3210			
Asp	Pro	Ile	Ala	Ile	Val	Ser	Met	Ser	Cys	Arg	Phe	Pro	Gly	Gly
3215						3220					3225			
Val	Arg	Thr	Pro	Glu	Asp	Leu	Trp	Arg	Leu	Leu	Val	Asp	Gly	Thr
3230						3235					3240			
Asp	Ala	Val	Gly	Ala	Phe	Pro	Ala	Asp	Arg	Gly	Trp	Asp	Leu	Asp
3245						3250					3255			
Arg	Leu	Tyr	Ser	Pro	Asp	Pro	Asp	Gln	Pro	Gly	Thr	Ser	Tyr	Thr
3260						3265					3270			
Arg	Glu	Gly	Gly	Phe	Phe	Asp	Gly	Ala	Ala	Asp	Phe	Asp	Pro	Gly
3275						3280					3285			
Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln
3290						3295					3300			
Gln	Arg	Leu	Leu	Leu	Glu	Thr	Ser	Trp	Glu	Ala	Ile	Glu	Arg	Ala
3305						3310					3315			
Gly	Ile	Asp	Pro	Ser	Ser	Leu	Arg	Gly	Ser	Gln	Ala	Gly	Val	Phe
3320						3325					3330			
Val	Gly	Thr	Asn	Gly	Gln	Asp	Tyr	Leu	Ser	Leu	Ile	Thr	Arg	Glu
3335						3340					3345			
Ser	Glu	Gly	Leu	Glu	Gly	His	Leu	Gly	Thr	Gly	Asn	Ala	Gly	Ser
3350						3355					3360			

Val Met	Ser Gly Arg Val	Ser Tyr Val Leu Gly	Leu Glu Gly Pro
3365		3370	3375
Ala Val	Thr Val Asp Thr	Ala Cys Ser Ser Ser	Leu Val Ala Leu
3380		3385	3390
His Trp	Ala Ile Gln Ala	Leu Arg Gln Gly Glu	Cys Ser Met Ala
3395		3400	3405
Leu Ala	Gly Gly Val Thr	Val Met Ser Thr Pro	Glu Asn Phe Val
3410		3415	3420
Asp Phe	Ser Arg Gln Arg	Gly Leu Ala Glu Asp	Gly Arg Ile Lys
3425		3430	3435
Ala Phe	Ala Ser Ala Ala	Asp Gly Thr Gly Trp	Gly Glu Gly Val
3440		3445	3450
Gly Met	Leu Leu Val Glu	Arg Leu Ser Asp Ala	Arg Arg Asn Gly
3455		3460	3465
His Pro	Val Leu Ala Val	Val Arg Gly Ser Ala	Val Asn Gln Asp
3470		3475	3480
Gly Ala	Ser Asn Gly Leu	Thr Ala Pro Asn Gly	Pro Ser Gln Gln
3485		3490	3495
Arg Val	Ile Arg Ala Ala	Leu Ala Ser Ala Gly	Leu Ser Ala Ala
3500		3505	3510
Asp Val	Asp Val Val Glu	Ala His Gly Thr Gly	Thr Lys Leu Gly
3515		3520	3525
Asp Pro	Ile Glu Ala Gln	Ala Leu Leu Ala Thr	Tyr Gly Gln Asp
3530		3535	3540
Arg Pro	Ala Gly Arg Pro	Leu Trp Leu Gly Ser	Ile Lys Ser Asn
3545		3550	3555
Ile Gly	His Thr Gln Ala	Ala Ala Gly Val Ala	Gly Ile Ile Lys
3560		3565	3570
Met Val	Leu Ala Met Gln	His Gly Val Leu Pro	Gln Thr Leu His
3575		3580	3585
Val Asp	Glu Pro Thr Pro	His Val Asp Trp Ser	Ala Gly Glu Val
3590		3595	3600
Thr Leu	Leu Thr Glu Gln	Thr Ala Trp Pro Thr	Val Asp Arg Pro
3605		3610	3615
Arg Arg	Ala Gly Val Ser	Ser Phe Gly Ile Ser	Gly Thr Asn Ala
3620		3625	3630
His Thr	Ile Ile Glu Gln	Ala Pro Ala Val Glu	Gln Leu Ala Asp
3635		3640	3645
Gly Asp	Ala Thr Pro Ala	Thr Pro Ala Leu Ala	Leu Pro Leu Pro
3650		3655	3660

Tyr	Val	Leu	Ser	Ala	Lys	Ser	Pro	Glu	Ala	Leu	Arg	Ala	Gln	Ala
	3665					3670					3675			
Ser	Val	Leu	Arg	Thr	His	Leu	Glu	Ala	Thr	Asp	His	Asn	Gly	Pro
	3680					3685					3690			
Gly	Ser	Asp	Asp	Leu	Ala	Phe	Ser	Leu	Ala	Thr	Ala	Arg	Ala	His
	3695					3700					3705			
Leu	Glu	His	Arg	Ala	Val	Leu	Thr	Ala	Asp	Asp	Pro	Gln	Glu	Phe
	3710					3715					3720			
Arg	Glu	Ala	Leu	Ala	Arg	Leu	Ala	Asp	Gly	Asp	Pro	Ser	Pro	Arg
	3725					3730					3735			
Ile	Thr	Thr	Gly	Ala	Val	Ser	Asp	Gly	Arg	Thr	Ala	Phe	Leu	Phe
	3740					3745					3750			
Thr	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr
	3755					3760					3765			
Glu	Ala	Tyr	Pro	Val	Phe	Ala	Asp	Ala	Leu	Asp	Ala	Val	Cys	Ala
	3770					3775					3780			
His	Val	Asp	Ala	His	Leu	Glu	Val	Pro	Leu	Lys	Asp	Val	Leu	Phe
	3785					3790					3795			
Gly	Ala	Asp	Ala	Gly	Leu	Leu	Asp	Gln	Thr	Ala	Tyr	Thr	Gln	Pro
	3800					3805					3810			
Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Val	Glu	Ser
	3815					3820					3825			
Trp	Gly	Val	Lys	Pro	Asp	Phe	Val	Ala	Gly	His	Ser	Ile	Gly	Glu
	3830					3835					3840			
Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val	Phe	Ser	Leu	Gln	Asp	Ala
	3845					3850					3855			
Ser	Glu	Leu	Val	Phe	Ala	Arg	Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro
	3860					3865					3870			
Thr	Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala	Ser	Glu	Asp	Glu	Val
	3875					3880					3885			
Leu	Pro	Leu	Leu	Thr	Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly
	3890					3895					3900			
Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala
	3905					3910					3915			
Ile	Ala	Glu	Ser	Phe	Thr	Asp	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val
	3920					3925					3930			
Ser	His	Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met	Leu	Asp	Ala
	3935					3940					3945			
Phe	Arg	Glu	Ile	Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Pro	Ser	Arg	Ile
	3950					3955					3960			



Pro	Val	Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Ser	Asp	Glu	Met
3965						3970					3975			
Gly	Ser	Ala	Glu	Phe	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg
3980						3985					3990			
Phe	Leu	Asp	Gly	Ile	Arg	Thr	Leu	Glu	Ala	Ala	Gly	Val	Thr	Lys
3995						4000					4005			
Tyr	Val	Glu	Leu	Gly	Pro	Asp	Gly	Val	Leu	Ser	Ala	Met	Ala	Gln
4010						4015					4020			
Asp	Cys	Val	Ser	Gly	Glu	Gly	Ser	Val	Phe	Ile	Pro	Val	Leu	Arg
4025						4030					4035			
Lys	Ala	Arg	Pro	Glu	Ala	Glu	Ser	Val	Thr	Thr	Ala	Leu	Ala	Ser
4040						4045					4050			
Ala	His	Val	His	Gly	Ile	Pro	Val	Asp	Trp	Gln	Ala	Tyr	Phe	Ala
4055						4060					4065			
Gly	Thr	Gly	Ala	Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Ala	Phe	Gln
4070						4075					4080			
Arg	Gln	Arg	Tyr	Trp	Pro	Ser	Ala	Ala	Ala	Phe	Val	Thr	Gly	Asp
4085						4090					4095			
Pro	Thr	Ala	Ile	Gly	Leu	Gly	Asp	Ala	Gly	His	Pro	Leu	Leu	Gly
4100						4105					4110			
Ala	Ala	Val	Ala	Leu	Ala	Asp	Ser	Glu	Gly	Val	Leu	Phe	Thr	Gly
4115						4120					4125			
Arg	Leu	Ser	Leu	Asp	Thr	His	Pro	Trp	Leu	Ala	Asp	His	Thr	Ile
4130						4135					4140			
Leu	Gly	Ser	Val	Leu	Leu	Pro	Gly	Thr	Ala	Phe	Val	Asp	Leu	Ala
4145						4150					4155			
Ile	Arg	Ala	Gly	Asp	Gln	Val	Gly	Cys	Asp	Val	Val	Glu	Glu	Leu
4160						4165					4170			
Thr	Leu	Glu	Ala	Pro	Leu	Val	Val	Pro	Gln	Arg	Gly	Gly	Val	Gln
4175						4180					4185			
Leu	Gln	Leu	Val	Val	Glu	Ala	Pro	Ser	Gly	Pro	Gly	Gln	Arg	Pro
4190						4195					4200			
Phe	Ser	Val	His	Ser	Arg	Arg	Gln	Asp	Ala	Tyr	Ala	Glu	Glu	Pro
4205						4210					4215			
Trp	Met	Arg	His	Ala	Ser	Gly	Val	Leu	Thr	Ser	Gly	Val	Ser	Arg
4220						4225					4230			
Arg	Glu	Leu	Ser	Val	Glu	Gly	Gly	Glu	Phe	Glu	Ala	Leu	Ala	Val
4235						4240					4245			
Trp	Pro	Pro	Thr	Gly	Ala	Val	Pro	Val	Asp	Val	Arg	Gly	Leu	Tyr
4250						4255					4260			

Glu	Glu	Leu	Ala	Glu	Ala	Gly	Val	Ala	Tyr	Gly	Pro	Leu	Phe	Gln
4265						4270					4275			
Gly	Leu	Lys	Ala	Ala	Trp	Arg	Arg	Asp	Gly	Glu	Leu	Phe	Thr	Glu
4280						4285					4290			
Val	Ala	Leu	Pro	Gly	Glu	Ala	Arg	Arg	Glu	Ala	Ala	Arg	Phe	Gly
4295						4300					4305			
Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Gly	Leu	His	Ala	Ile	Gly	His
4310						4315					4320			
Gly	Glu	Gly	Pro	Glu	Pro	Ala	Met	Thr	Gly	Ala	Leu	Leu	Pro	Phe
4325						4330					4335			
Ser	Trp	Ala	Gly	Val	Ser	Leu	Tyr	Ala	Ala	Gly	Ala	Ser	Ser	Leu
4340						4345					4350			
Arg	Met	Arg	Leu	Thr	Pro	His	Thr	Pro	Asp	Asp	Ala	His	Thr	Met
4355						4360					4365			
Ala	Leu	Leu	Val	Ala	Asp	Glu	Thr	Gly	Arg	Pro	Val	Ala	Ala	Val
4370						4375					4380			
Glu	Ser	Leu	Ile	Leu	Arg	Thr	Ala	Ser	Ala	Asp	Gln	Val	Arg	Ala
4385						4390					4395			
Ala	Asp	Gly	Gly	His	Leu	Asp	Ser	Leu	Phe	Lys	Val	Glu	Trp	Leu
4400						4405					4410			
Pro	Val	Ala	Gly	Gly	Ala	Thr	Pro	His	Gly	Asp	Ser	Thr	Gly	Arg
4415						4420					4425			
Arg	Trp	Ala	Val	Leu	Gly	Arg	Asp	Gly	Leu	Gly	Leu	Pro	Ala	Thr
4430						4435					4440			
Gly	Val	Gln	Gly	Gln	Val	Ala	Glu	Tyr	Asp	Asp	Ala	Ser	Ala	Leu
4445						4450					4455			
Gly	Ala	Ala	Leu	Ala	Ala	Gly	Glu	Pro	Val	Pro	Asp	Ala	Val	Phe
4460						4465					4470			
Val	His	Pro	Gly	Ala	Leu	Pro	Gly	Gln	Asp	Thr	Asp	Thr	Thr	Ala
4475						4480					4485			
Ala	Ser	Val	His	Ala	Ala	Val	Thr	Asp	Ala	Leu	Ser	Phe	Val	Gln
4490						4495					4500			
Glu	Trp	Leu	Ala	Asp	Glu	Arg	Phe	Ala	Ala	Thr	Arg	Leu	Val	Trp
4505						4510					4515			
Leu	Thr	Ser	Gly	Ala	Val	Ala	Asp	Glu	Pro	Gly	Ala	Gly	Val	Arg
4520						4525					4530			
Asp	Leu	Ala	Gly	Ser	Ala	Val	Arg	Gly	Leu	Leu	Arg	Ser	Ala	Gln
4535						4540					4545			
Ser	Glu	Asn	Pro	Gly	Gln	Leu	Leu	Met	Leu	Asp	Leu	Asp	Gln	Asp
4550						4555					4560			

Pro	Ala	Ser	Leu	Ala	Ala	Leu	Pro	Ala	Ala	Leu	Ala	Ala	Gly	Glu
4565						4570					4575			
Pro	Glu	Leu	Ala	Ile	Arg	Arg	Gly	Glu	Leu	Arg	Thr	Pro	Arg	Leu
4580						4585					4590			
Thr	Arg	Val	Pro	Ser	Ala	Asp	Ala	Ala	Ala	Glu	Pro	Leu	Gly	Thr
4595						4600					4605			
Leu	Gly	Asp	Pro	Ser	Gly	Thr	Val	Leu	Val	Thr	Gly	Ala	Thr	Gly
4610						4615					4620			
Thr	Leu	Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Val	Thr	Ala	Tyr	Gly
4625						4630					4635			
Val	Arg	Arg	Leu	Leu	Leu	Thr	Ser	Arg	Arg	Gly	Pro	Glu	Ala	Glu
4640						4645					4650			
Gly	Ala	Ala	Glu	Leu	Val	Ala	Glu	Leu	Glu	Gln	Leu	Gly	Ala	His
4655						4660					4665			
Val	Glu	Leu	Val	Ala	Cys	Asp	Ala	Ala	Asp	Arg	Ser	Ala	Leu	Ala
4670						4675					4680			
Ala	Leu	Leu	Gly	Ala	Val	Pro	Ser	Glu	His	Pro	Leu	Thr	Ala	Val
4685						4690					4695			
Val	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Ile	Leu	Ser	Ser	Leu
4700						4705					4710			
Thr	Pro	Glu	Arg	Val	Ala	Ala	Val	Leu	Arg	Pro	Lys	Val	Asp	Ala
4715						4720					4725			
Ala	Trp	Asn	Leu	His	Glu	Leu	Thr	Arg	Glu	Leu	Gly	Leu	Ser	Ala
4730						4735					4740			
Phe	Val	Leu	Phe	Ser	Gly	Ala	Ala	Ala	Ala	Phe	Gly	Ala	Ala	Gly
4745						4750					4755			
Gln	Gly	Asn	Tyr	Ala	Ala	Ala	Asn	Ser	Phe	Leu	Glu	Ala	Leu	Ala
4760						4765					4770			
Glu	Gln	Arg	Arg	Ala	Glu	Gly	Leu	Pro	Ala	Thr	Ser	Leu	Ala	Trp
4775						4780					4785			
Gly	Leu	Trp	Ala	Pro	Gln	Thr	Gly	Gly	Met	Ala	Gln	Gln	Leu	Asp
4790						4795					4800			
Glu	Val	Asp	Leu	Arg	Arg	Ile	Ala	Arg	Asp	Gly	Val	Gly	Gly	Leu
4805						4810					4815			
Ser	Gly	Asp	Glu	Gly	Leu	Gly	Leu	Phe	Asp	Thr	Ala	Met	Thr	Val
4820						4825					4830			
Asp	Ala	Ala	Val	Leu	Leu	Pro	Met	Arg	Leu	Asp	Leu	Ala	Val	Ala
4835						4840					4845			
Arg	Ala	Gln	Ala	Val	Ser	Thr	Gly	Glu	Thr	Pro	Ala	Leu	Leu	Arg
4850						4855					4860			

Ala Leu	Ile Arg Val Pro	Ala Arg Arg Ala Val	Glu Gln Arg Thr
4865		4870	4875
Ala Ala	Asp Gly Ala Ser	Pro Leu Ala Ala Arg	Leu Ser Ala Leu
4880		4885	4890
Pro Asp	Ala Glu Arg Glu	Asp Met Leu Leu Asp	Leu Val Cys Gly
4895		4900	4905
Arg Val	Ala Glu Val Leu	Gly His Thr Asp Ala	Arg Ala Val Asp
4910		4915	4920
Ala Asp	Arg Ala Phe Lys	Glu Leu Gly Phe Asp	Ser Leu Thr Ala
4925		4930	4935
Val Glu	Leu Arg Asn Val	Leu Lys Ala Ala Thr	Gly Leu Arg Leu
4940		4945	4950
Ser Pro	Thr Leu Val Phe	Asp Tyr Pro Thr Pro	Val Ala Leu Ala
4955		4960	4965
Arg His	Leu Leu Ala Glu	Leu Ala Gly Thr Ala	Asp Asp Gln Asp
4970		4975	4980
Ala Val	Arg Gly Arg Lys	Ala Pro Ala Arg Pro	Ala Thr Ala Ala
4985		4990	4995
Val Thr	Ser Val Thr Gly	Glu Asp Pro Ile Val	Ile Val Gly Met
5000		5005	5010
Gly Cys	Arg Phe Pro Gly	Gly Val Arg Ser Pro	Glu Asp Leu Trp
5015		5020	5025
Gln Leu	Val Ala Thr Gly	Gly Asp Gly Ile Thr	Gly Phe Pro Ser
5030		5035	5040
Asp Arg	Gly Trp Asn Val	Glu Ala Leu Tyr His	Pro Asp Pro Asp
5045		5050	5055
His Ala	Gly Thr Ser Tyr	Thr Arg Glu Gly Gly	Phe Leu His Asp
5060		5065	5070
Ala Ala	Asp Phe Asp Pro	Gly Phe Phe Gly Ile	Ser Pro Arg Glu
5075		5080	5085
Ala Leu	Ala Met Asp Pro	Gln Gln Arg Leu Leu	Leu Glu Thr Ser
5090		5095	5100
Trp Glu	Ala Phe Glu Arg	Ala Gly Ile Asp Pro	Ala Thr Leu Arg
5105		5110	5115
Gly Ser	Arg Thr Gly Val	Phe Ala Gly Val Met	Tyr His Asp Tyr
5120		5125	5130
Val Thr	Gly Ile Gly Asp	Gly Gly Ser Ala Val	Glu Leu Pro Glu
5135		5140	5145
Gly Val	Glu Gly Tyr Leu	Gly Thr Gly Asn Ala	Gly Ser Ile Ala
5150		5155	5160

Ser	Gly	Arg	Ile	Ala	Tyr	Thr	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Val
5165						5170					5175			
Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Trp
5180						5185					5190			
Ala	Ile	Gln	Ala	Leu	Arg	Ser	Gly	Glu	Cys	Thr	Met	Ala	Leu	Ala
5195						5200					5205			
Gly	Gly	Val	Ala	Val	Met	Ala	Thr	Pro	Glu	Thr	Phe	Val	Asp	Phe
5210						5215					5220			
Ser	Arg	Gln	Arg	Gly	Leu	Ser	Ala	Asp	Gly	Arg	Cys	Lys	Ser	Phe
5225						5230					5235			
Ala	Ala	Ala	Ala	Asp	Gly	Thr	Gly	Trp	Ala	Glu	Gly	Ala	Gly	Met
5240						5245					5250			
Leu	Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Glu	Arg	Asn	Gly	His	Pro
5255						5260					5265			
Val	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala
5270						5275					5280			
Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val
5285						5290					5295			
Ile	Arg	Glu	Ala	Leu	Ala	Ser	Ala	Asp	Leu	Ser	Ala	Ala	Asp	Ile
5300						5305					5310			
Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Arg	Leu	Gly	Asp	Pro
5315						5320					5325			
Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Arg	Glu	Arg	Glu
5330						5335					5340			
Ala	Gly	Arg	Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly
5345						5350					5355			
His	Thr	Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Met	Val
5360						5365					5370			
Met	Ala	Met	Arg	His	Gly	Val	Leu	Pro	Gln	Thr	Leu	His	Val	Asp
5375						5380					5385			
Glu	Pro	Ser	Pro	Gln	Val	Asp	Trp	Glu	Ala	Gly	Glu	Val	Ser	Leu
5390						5395					5400			
Leu	Thr	Gly	Ala	Met	Pro	Trp	Pro	Gln	Thr	Gly	Arg	Pro	Arg	Arg
5405						5410					5415			
Ala	Gly	Val	Ser	Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala	His	Thr
5420						5425					5430			
Ile	Ile	Glu	Gln	Pro	Pro	Thr	Arg	Glu	Val	Thr	Pro	Thr	Val	Pro
5435						5440					5445			
Val	Ala	Pro	Val	Val	Pro	Thr	Val	Pro	Thr	Val	Pro	Val	Val	Pro
5450						5455					5460			

Trp Val	Leu Ser Gly Lys	Gly	Glu Glu Ala Leu	Arg	Ala Gln Ala
5465		5470		5475	
Arg Gln	Leu Gln Ser Tyr	Val	Leu Arg Ala Pro	Glu	Leu Arg Pro
5480		5485		5490	
Val Asp	Ile Ala Gly Ser	Leu	Ala Val Gly Arg	Ala	Ser Phe Glu
5495		5500		5505	
Asp Arg	Ala Ala Val Val	Ala	Ala Asp Arg Glu	Gly	Leu Leu Ala
5510		5515		5520	
Ala Leu	Ala Ala Leu Ala	Asp	Gly Gly Ser Ala	Thr	Gly Ala Val
5525		5530		5535	
Glu Gly	Ser Ala Val Gly	Gly	Lys Leu Ala Phe	Leu	Phe Thr Gly
5540		5545		5550	
Gln Gly	Ser Gln Arg Leu	Gly	Met Gly Arg Glu	Leu	Tyr Glu Ala
5555		5560		5565	
Tyr Pro	Val Phe Ala Glu	Ala	Leu Asp Ala Val	Cys	Ala Arg Leu
5570		5575		5580	
Glu Leu	Pro Leu Lys Asp	Val	Leu Phe Gly Ala	Asp	Ala Gly Leu
5585		5590		5595	
Leu Asp	Glu Thr Ala Tyr	Thr	Gln Pro Ala Leu	Phe	Ala Val Glu
5600		5605		5610	
Val Ala	Leu Phe Arg Leu	Val	Glu Ser Trp Gly	Leu	Arg Pro Asp
5615		5620		5625	
Phe Val	Ala Gly His Ser	Ile	Gly Glu Ile Ala	Ala	Ala His Val
5630		5635		5640	
Ala Gly	Val Phe Ser Leu	Asp	Asp Ala Cys Ala	Leu	Val Glu Ala
5645		5650		5655	
Arg Gly	Arg Leu Met Gly	Ala	Leu Pro Ala Gly	Gly	Val Met Ile
5660		5665		5670	
Ala Val	Gln Ala Ser Glu	Asp	Glu Val Leu Pro	Leu	Leu Thr Asp
5675		5680		5685	
Arg Val	Ser Ile Ala Ala	Ile	Asn Gly Pro Arg	Ser	Val Val Ile
5690		5695		5700	
Ala Gly	Asp Glu Ala Asp	Ala	Val Ala Ile Val	Glu	Ser Phe Thr
5705		5710		5715	
Gly Arg	Lys Ser Lys Arg	Leu	Thr Val Ser His	Ala	Phe His Ser
5720		5725		5730	
Pro His	Met Asp Gly Met	Leu	Glu Asp Phe Arg	Ala	Val Ala Glu
5735		5740		5745	
Gly Leu	Ser Tyr Glu Ala	Pro	Arg Ile Pro Val	Val	Ser Asn Leu
5750		5755		5760	

Thr Gly	Thr Leu Val	Thr Asp	Glu Met Gly Ser	Ala	Glu Phe Trp
5765		5770		5775	
Val Arg	His Val Arg Glu	Ala	Val Arg Phe Leu	Asp	Gly Ile Arg
5780		5785		5790	
Ala Leu	Glu Ala Ala Gly	Val	Thr Thr Tyr Val	Glu	Leu Gly Pro
5795		5800		5805	
Gly Gly	Val Leu Ser Ala	Leu	Ala Gln Glu Cys	Val	Ser Gly Asp
5810		5815		5820	
Gly Ala	Ala Phe Val Pro	Val	Leu Arg Ser Gly	Arg	Ser Glu Ala
5825		5830		5835	
Glu Thr	Ala Val Thr Ala	Leu	Ala Gln Ala His	Val	Arg Gly Val
5840		5845		5850	
Asn Val	Asp Trp Ala Ala	Phe	Phe Ala Gly Thr	Gly	Ala Glu Arg
5855		5860		5865	
Val Asp	Leu Pro Thr Tyr	Ala	Phe Gln Arg Gln	Arg	Tyr Trp Leu
5870		5875		5880	
His Ile	Pro Arg Val Ala	Gln	Ser Gly Val Ala	Asp	Glu Val Asp
5885		5890		5895	
Ala Arg	Phe Trp Asp Ala	Val	Glu Arg Glu Asp	Leu	Glu Ser Leu
5900		5905		5910	
Ala Ser	Thr Leu Glu Val	Asp	Asp Glu Ser Ala	Trp	Ser Ser Val
5915		5920		5925	
Leu Pro	Ala Leu Ser Ala	Trp	Arg Arg Glu Arg	Arg	Ala Gln Ser
5930		5935		5940	
Glu Val	Asp Gly Trp Arg	Tyr	Arg Val Ser Trp	Lys	Pro Leu Ala
5945		5950		5955	
Glu Val	Ser Ala Ser Gly	Leu	Ser Gly Ser Trp	Val	Val Ile Ser
5960		5965		5970	
Pro Ala	Gly Ser Val Asp	Asp	Ser Ala Val Val	Ser	Ala Leu Val
5975		5980		5985	
Gly Arg	Gly Ala Glu Val	Arg	Arg Val Val Val	Glu	Ala Gly Val
5990		5995		6000	
Asp Arg	Ser Ala Leu Ala	Gly	Leu Leu Ala Asp	Ala	Gly Ser Ala
6005		6010		6015	
Ala Gly	Val Val Ser Leu	Leu	Gly Leu Asp Glu	Ser	Glu Gly Leu
6020		6025		6030	
Leu Gly	Thr Val Gly Leu	Val	Gln Ala Leu Gly	Asp	Ala Gly Val
6035		6040		6045	
Glu Ala	Pro Leu Trp Cys	Leu	Thr Arg Gly Ala	Val	Ser Val Gly
6050		6055		6060	

Arg	Ser	Asp	Arg	Leu	Val	Ser	Pro	Val	Gln	Ala	Gln	Val	Trp	Gly
6065						6070					6075			
Leu	Gly	Arg	Val	Ala	Ala	Leu	Glu	Val	Pro	Glu	Arg	Trp	Gly	Gly
6080						6085					6090			
Leu	Val	Asp	Leu	Pro	Glu	Val	Leu	Asp	Glu	Arg	Ala	Val	Ala	Arg
6095						6100					6105			
Leu	Val	Gly	Val	Leu	Ala	Gly	Ser	Gly	Glu	Asp	Gln	Val	Ala	Val
6110						6115					6120			
Arg	Ser	Ser	Gly	Val	Phe	Gly	Arg	Arg	Leu	Val	Arg	Ala	Pro	Arg
6125						6130					6135			
Ala	Glu	Gly	Ala	Ser	Ala	Trp	Thr	Pro	Thr	Gly	Thr	Val	Leu	Val
6140						6145					6150			
Thr	Gly	Gly	Thr	Gly	Val	Leu	Gly	Gly	Arg	Val	Ala	Arg	Trp	Leu
6155						6160					6165			
Ala	Gly	Ala	Gly	Ala	Glu	Arg	Leu	Val	Leu	Thr	Ser	Arg	Arg	Gly
6170						6175					6180			
Pro	Asp	Ala	Pro	Gly	Ala	Ala	Glu	Leu	Val	Glu	Glu	Leu	Thr	Thr
6185						6190					6195			
Gly	Phe	Gly	Val	Glu	Val	Ser	Val	Val	Ala	Cys	Asp	Ala	Ala	Asp
6200						6205					6210			
Arg	Asp	Ala	Leu	Arg	Thr	Leu	Leu	Ser	Ala	Glu	Ala	Gly	Thr	Leu
6215						6220					6225			
Thr	Ala	Val	Ile	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Val	Leu
6230						6235					6240			
Asp	Ala	Leu	Thr	Pro	Asp	Arg	Ile	Asp	Ser	Val	Leu	Arg	Ala	Lys
6245						6250					6255			
Ala	Val	Ser	Ala	Phe	Asn	Leu	His	Glu	Leu	Thr	Ala	Glu	Leu	Gly
6260						6265					6270			
Ile	Glu	Leu	Ser	Ala	Phe	Val	Leu	Phe	Ser	Ser	Met	Ser	Gly	Thr
6275						6280					6285			
Val	Gly	Ala	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Asn	Ala	Tyr
6290						6295					6300			
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Gly	Val	Ser	Gly	Thr	Asn	Ala	His	Thr	Ile	Ile	Glu	Gln	Ala	Pro	Glu	
	450					455					460					
Pro	Asp	Ala	Glu	Ser	Val	Ser	Val	Ser	Gly	Ser	Ala	Pro	Ala	Ala	Ala	
465					470				475						480	
Pro	Ala	Val	Pro	Thr	Pro	Val	Pro	Thr	Leu	Val	Pro	Ala	Val	Leu	Pro	
			485					490						495		
Trp	Thr	Leu	Ser	Gly	Arg	Ser	Thr	Ala	Ala	Leu	Arg	Ala	Gln	Ala	Ala	
		500						505					510			
Arg	Leu	Leu	Thr	Thr	Gln	Gly	Gln	Asp	Gly	Ala	Thr	Glu	Pro	Gly	Arg	
	515					520						525				
Pro	Leu	Asp	Ile	Gly	Tyr	Ser	Leu	Ala	Thr	Thr	Arg	Ala	Ala	Leu	Glu	
	530					535					540					
His	Arg	Ala	Val	Leu	Leu	Gly	Arg	Thr	Glu	Asp	Asp	Phe	Ala	Ala	Ala	
545				550					555						560	
Leu	Ser	Ala	Leu	Ala	Glu	Gly	Ala	Glu	Ser	Ala	Gly	Leu	Val	Gln	Gly	
			565					570						575		
Arg	Val	Thr	Glu	Gly	Gly	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser	
		580						585					590			
Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	Ala	Tyr	Pro	Val	Phe	
		595					600					605				
Ala	Asp	Ala	Leu	Asp	Ala	Val	Cys	Ala	Arg	Leu	Glu	Leu	Pro	Leu	Lys	
	610					615					620					
Asp	Val	Leu	Phe	Gly	Ala	Asp	Ala	Gly	Leu	Leu	Asp	Glu	Thr	Ala	Tyr	
625				630					635						640	
Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Val	
			645					650						655		
Glu	Ser	Trp	Gly	Val	Lys	Pro	Asp	Phe	Val	Ala	Gly	His	Ser	Ile	Gly	
		660						665					670			
Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val	Phe	Ser	Leu	Glu	Asp	Ala	
	675						680					685				
Cys	Ala	Leu	Val	Ser	Ala	Arg	Gly	Arg	Leu	Met	Gly	Ala	Leu	Pro	Ala	
	690					695					700					

Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala	Ser	Glu	Ala	Glu	Val	Leu	Pro	
705					710					715					720	
Leu	Leu	Thr	Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	
				725					730					735		
Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Ala	Gly	Ser	
			740					745					750			
Phe	Ala	Asp	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe	His	
		755					760					765				
Ser	Pro	His	Met	Asp	Gly	Met	Leu	Glu	Asp	Phe	Arg	Leu	Val	Ala	Glu	
	770					775					780					
Gly	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Val	Val	Ser	Asn	Leu	Thr	
785					790					795					800	
Gly	Ala	Leu	Val	Ser	Asp	Glu	Met	Gly	Ser	Ala	Glu	Phe	Trp	Val	Arg	
				805					810					815		
His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Thr	Leu	Glu	
			820					825					830			
Ala	Ala	Gly	Val	Thr	Lys	Tyr	Val	Glu	Leu	Gly	Pro	Asp	Gly	Val	Leu	
		835					840					845				
Ser	Ala	Met	Ala	Gln	Asp	Cys	Val	Ser	Gly	Glu	Gly	Ser	Val	Phe	Ile	
	850					855					860					
Pro	Val	Leu	Arg	Lys	Ala	Arg	Pro	Glu	Ala	Glu	Ser	Val	Thr	Thr	Ala	
865					870					875					880	
Leu	Ala	Thr	Ala	His	Val	His	Gly	Ile	Pro	Val	Asp	Trp	Gln	Ala	Phe	
				885					890					895		
Tyr	Ala	Gly	Thr	Gly	Ala	Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Ala	Phe	
			900					905					910			
Gln	His	Glu	Arg	Tyr	Trp	Leu	Glu	Pro	Ala	Thr	Gly	Gly	Ala	Gly	Asp	
		915					920					925				
Val	Ser	Gly	Ala	Gly	Leu	Asp	Pro	Ala	Gly	His	Pro	Leu	Leu	Gly	Ala	
	930					935					940					
Ala	Val	Thr	Leu	Ala	Gly	Ser	Asp	Ser	Val	Leu	Phe	Thr	Gly	Arg	Leu	
945					950					955					960	
Ser	Leu	Arg	Thr	Gln	Pro	Trp	Leu	Ala	Asp	His	Thr	Val	Ser	Gly	Thr	
				965					970					975		
Thr	Val	Leu	Pro	Gly	Ala	Ala	Phe	Val	Glu	Leu	Ala	Val	Arg	Ala	Gly	
			980					985					990			
Asp	Gln	Ala	Gly	Cys	Glu	Arg	Val	Glu	Ala	Leu	Val	Leu	Asp	Ala	Pro	
		995					1000					1005				
Leu	Ala	Leu	Pro	Ala	Glu	Gly	Ala	Val	Arg	Val	Gln	Val	Leu	Val		
	1010					1015					1020					

Glu	Ala	Pro	Asp	Glu	Gln	Gly	Arg	Arg	Pro	Phe	Thr	Val	Ser	Ser
1025						1030					1035			
Gln	Pro	Glu	Thr	Ala	Pro	Ala	Asp	Thr	Pro	Trp	Gly	Arg	His	Ala
1040						1045					1050			
Arg	Gly	Val	Leu	Ala	Pro	Thr	Ala	Pro	Ala	Pro	Ser	Phe	Asp	Leu
1055						1060					1065			
Ala	Gln	Trp	Pro	Pro	Ala	Gly	Ala	Glu	Ala	Val	Asp	Ile	Thr	Asp
1070						1075					1080			
Leu	Tyr	Ala	Ser	His	Asp	Thr	Pro	Gly	Ala	His	Gly	Pro	Glu	Arg
1085						1090					1095			
Gly	Gly	Leu	Phe	Arg	Ala	Val	Glu	Ala	Val	Trp	Arg	Cys	Asp	Gly
1100						1105					1110			
Asp	Leu	Phe	Ala	Glu	Val	Arg	Leu	Pro	Glu	Gly	Gly	Pro	Asp	Ala
1115						1120					1125			
Gln	Ala	Phe	Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Ala	Ala	His
1130						1135					1140			
Ala	Ala	Ser	Val	Leu	Asp	Glu	Gln	His	Gly	Thr	Gly	Ala	Gly	Leu
1145						1150					1155			
Gly	Thr	Trp	Ser	Asp	Val	Thr	Leu	His	Ala	Val	Gly	Ala	Gly	Ala
1160						1165					1170			
Leu	Arg	Val	Arg	Ile	Arg	Ser	Ala	Leu	Asp	Gly	Thr	Val	Gly	Leu
1175						1180					1185			
Asp	Leu	Ala	Asp	Asp	Leu	Gly	Glu	Pro	Val	Ala	Thr	Val	Gly	Gly
1190						1195					1200			
Leu	Thr	Pro	Arg	Pro	Phe	Ala	Gln	Ala	Gly	Ser	Gly	Gly	Gln	Val
1205						1210					1215			
Val	Gln	His	Asp	Ala	Leu	Phe	Gln	Leu	Asp	Trp	Val	Arg	Leu	Pro
1220						1225					1230			
Leu	Ala	Asp	Arg	Ser	Ser	Ala	Pro	Thr	Gly	Glu	Trp	Ala	Val	Leu
1235						1240					1245			
Gly	Ser	Ala	Asp	Gly	Phe	Ala	Asp	Leu	Glu	Ala	Leu	Gly	Ala	Ala
1250						1255					1260			
Val	Asp	Ala	Gly	Ala	Pro	Val	Pro	Pro	Tyr	Val	Val	Val	Pro	Leu
1265						1270					1275			
Glu	Arg	Gln	Ala	Thr	Gly	Asn	Gly	Ser	Asp	Ala	Leu	His	Glu	Ala
1280						1285					1290			
Val	His	Arg	Ala	Leu	Ala	Leu	Val	Arg	Ser	Trp	Leu	Asp	Asp	Gln
1295						1300					1305			
Arg	Phe	Glu	Thr	Ser	Arg	Leu	Val	Val	Leu	Thr	Arg	Gly	Ala	Val
1310						1315					1320			





Leu Phe Asp Ala Ala Leu Ala Ala Gly Arg Pro Val Leu Val Pro	1625	1630	1635
Ala Arg Leu His Leu Pro Gly Leu Arg Asn Ala Ala Gly Pro Gly	1640	1645	1650
Pro Val Ala Pro Val Phe Arg Ser Leu Leu Gly Ala Ser Gly Arg	1655	1660	1665
Arg Ala Ala Arg Thr Arg Thr Asp Gly Gly Thr Pro Leu Ala Glu	1670	1675	1680
Arg Leu Thr Arg Leu Ala Gly Pro Glu Gln Asp Arg Ala Leu Leu	1685	1690	1695
Asp Leu Val Arg Ala Gln Val Ala Ser Val Leu Gly His Ala Ser	1700	1705	1710
Ala Glu Gln Val Asp Pro Ala Arg Ala Phe Lys Asp Leu Gly Phe	1715	1720	1725
Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Gly Ala Ala	1730	1735	1740
Thr Gly Leu Arg Leu Pro Thr Thr Leu Val Phe Asp His Pro Thr	1745	1750	1755
Pro Thr Ala Leu Val Arg His Leu Arg Thr Asp Leu Leu Gly Ala	1760	1765	1770
Ala Pro Asp Pro Gly Ala Asp Ala Pro Gly Leu Pro Ala Arg Val	1775	1780	1785
Gly Leu Ala Asp Asp Pro Ile Ala Ile Val Ala Met Ser Cys Arg	1790	1795	1800
Tyr Pro Gly Gly Val Arg Thr Pro Glu Glu Leu Trp Arg Leu Val	1805	1810	1815
Glu Thr Gly Gly Asp Ala Ile Ala Gly Leu Pro Gly Asn Arg Gly	1820	1825	1830
Trp Asp Thr Asp Ala Leu His Ala Asp Glu Asp Gly Arg Thr Phe	1835	1840	1845
Ala Gly Gly Phe Leu Tyr Asp Ala Asp Ser Phe Asp Ala Asp Phe	1850	1855	1860
Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln	1865	1870	1875
Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Ile Glu Arg Ala Gly	1880	1885	1890
Ile Asp Pro Ser Ser Leu Arg Gly Ser Arg Ala Gly Val Phe Val	1895	1900	1905
Gly Ala Ala Tyr Ser Gly Tyr Asp Ala Gln Leu Glu Gln Ser Gly	1910	1915	1920

Val	Asp	Gly	Val	Leu	Gly	His	Val	Met	Thr	Gly	Asn	Ala	Gly	Ser
1925						1930					1935			
Val	Met	Ser	Gly	Arg	Val	Ser	Tyr	Ala	Leu	Gly	Leu	Glu	Gly	Pro
1940						1945					1950			
Ala	Val	Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu
1955						1960					1965			
His	Trp	Ala	Ile	Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Ser	Leu	Ala
1970						1975					1980			
Leu	Ala	Gly	Gly	Val	Thr	Val	Met	Ser	Thr	Pro	Gly	Thr	Phe	Ser
1985						1990					1995			
Glu	Phe	Ser	Gln	Gln	Gly	Gly	Leu	Ser	Pro	Asp	Gly	Arg	Cys	Lys
2000						2005					2010			
Ala	Phe	Ala	Ser	Ala	Ala	Asp	Gly	Thr	Gly	Trp	Gly	Glu	Gly	Val
2015						2020					2025			
Gly	Met	Leu	Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly
2030						2035					2040			
His	Pro	Val	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Val	Asn	Gln	Asp
2045						2050					2055			
Gly	Ala	Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln
2060						2065					2070			
Arg	Val	Ile	Arg	Ala	Ala	Leu	Ala	Ser	Ala	Gly	Leu	Ser	Ala	Ala
2075						2080					2085			
Asp	Val	Asp	Val	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Lys	Leu	Gly
2090						2095					2100			
Asp	Pro	Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Asp
2105						2110					2115			
Arg	Pro	Asp	Gly	Arg	Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn
2120						2125					2130			
Ile	Gly	His	Thr	Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys
2135						2140					2145			
Met	Val	Met	Ala	Met	Arg	His	Gly	Val	Leu	Pro	Arg	Thr	Leu	His
2150						2155					2160			
Val	Asp	Glu	Pro	Thr	Ser	His	Val	Asp	Trp	Ser	Ala	Gly	Glu	Val
2165						2170					2175			
Ser	Leu	Leu	Ser	Glu	Ser	Ala	Glu	Trp	Pro	Leu	Thr	Glu	Arg	Pro
2180						2185					2190			
Arg	Arg	Ala	Gly	Val	Ser	Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala
2195						2200					2205			
His	Thr	Ile	Ile	Glu	Gln	Ala	Pro	Glu	Thr	Gly	Thr	Glu	Ala	Glu
2210						2215					2220			

Pro	Ser	Ala	Glu	Thr	Leu	Thr	His	Gly	Thr	Val	Pro	Tyr	Val	Leu
2225						2230					2235			
Ser	Ala	Lys	Ser	Ser	Asp	Ala	Leu	Arg	Ala	Gln	Ala	Arg	Gln	Leu
2240						2245					2250			
Leu	Ala	Val	Val	Glu	Ala	Ala	Glu	Ser	Pro	Arg	Val	Ala	Asp	Leu
2255						2260					2265			
Ala	Tyr	Ser	Leu	Ala	Thr	Ser	Arg	Ala	Gly	Leu	Asp	His	Arg	Ala
2270						2275					2280			
Ala	Leu	Val	Ala	Asp	Asp	Arg	Glu	Asn	Leu	Thr	Arg	Ala	Leu	Ala
2285						2290					2295			
Ala	Leu	Ala	Ala	Asp	Glu	Gln	Val	Pro	Gly	Leu	Val	Arg	Gly	Thr
2300						2305					2310			
Ala	Thr	Gly	Gly	Gly	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser
2315						2320					2325			
Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	Thr	Tyr	Pro	Val
2330						2335					2340			
Phe	Ala	Arg	Ala	Leu	Asp	Ala	Val	Asp	Ala	Arg	Leu	Glu	Leu	Pro
2345						2350					2355			
Met	Lys	Glu	Val	Leu	Phe	Gly	Ala	Asp	Ala	Asp	Leu	Leu	Asn	Glu
2360						2365					2370			
Thr	Ala	His	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu
2375						2380					2385			
Phe	Arg	Leu	Leu	Glu	Ser	Trp	Gly	Val	Arg	Pro	Asp	Val	Leu	Ala
2390						2395					2400			
Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val
2405						2410					2415			
Phe	Ser	Leu	Asp	Asp	Ala	Cys	Thr	Leu	Val	Glu	Ala	Arg	Gly	Arg
2420						2425					2430			
Leu	Met	Gln	Ala	Leu	Pro	Thr	Gly	Gly	Val	Met	Ile	Ala	Val	Gln
2435						2440					2445			
Ala	Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	Gly	Gln	Val	Ser
2450						2455					2460			
Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp
2465						2470					2475			
Glu	Ala	Asp	Ala	Val	Ala	Ile	Ala	Glu	Ser	Phe	Thr	Asp	Arg	Lys
2480						2485					2490			
Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser	Pro	His	Met
2495						2500					2505			
Asp	Gly	Met	Leu	Ala	Asp	Phe	Arg	Lys	Val	Ala	Glu	Gly	Leu	Val
2510						2515					2520			

Tyr	Glu	Asn	Pro	Arg	Ile	Pro	Ile	Val	Ser	Asn	Leu	Thr	Gly	Thr
2525						2530					2535			
Leu	Val	Thr	Asp	Glu	Met	Ala	Ser	Ala	Asp	Phe	Trp	Val	Arg	His
2540						2545					2550			
Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Ala	Leu	Glu
2555						2560					2565			
Ser	Arg	Gly	Val	Thr	Thr	Tyr	Ile	Glu	Leu	Gly	Pro	Asp	Gly	Val
2570						2575					2580			
Leu	Ser	Ala	Leu	Ala	Gln	Asp	Cys	Leu	Thr	Ala	Gly	Thr	Gly	Thr
2585						2590					2595			
Gly	Thr	Ala	Ile	Phe	Ala	Pro	Val	Leu	Arg	Ala	Ala	Arg	Pro	Glu
2600						2605					2610			
Ala	Glu	Ser	Val	Thr	Thr	Ala	Leu	Ala	Thr	Ala	His	Val	His	Gly
2615						2620					2625			
Thr	Pro	Val	Asp	Trp	Arg	Ala	Tyr	Phe	Ala	Gly	Thr	Gly	Ala	Arg
2630						2635					2640			
Arg	Ala	Asp	Leu	Pro	Thr	Tyr	Pro	Phe	Gln	Gly	Arg	Arg	Tyr	Trp
2645						2650					2655			
Pro	Glu	Ala	Ala	Ala	Pro	Ser	Gly	Ala	Ala	Ala	Gly	Leu	Gly	Asp
2660						2665					2670			
Gln	Ala	Val	Asp	Ala	Arg	Phe	Trp	Asp	Ala	Val	Glu	Arg	Ala	Asp
2675						2680					2685			
Leu	Gly	Ser	Leu	Ile	Gly	Gly	Pro	Glu	Ile	Asp	Gly	Asp	Gln	Pro
2690						2695					2700			
Leu	Ser	Ser	Val	Leu	Pro	Ala	Leu	Ser	Asp	Trp	Arg	Arg	Asn	Gln
2705						2710					2715			
Gln	Ala	Gln	Ser	Gln	Ala	Asp	Ala	Arg	Leu	Tyr	Arg	Ile	Ala	Trp
2720						2725					2730			
Gln	Pro	Trp	Ser	Gly	Ala	Gly	Arg	Gly	Thr	Pro	Ala	Gly	Thr	Trp
2735						2740					2745			
Leu	Val	Ala	Val	Pro	Ala	Pro	Tyr	Ala	Asp	Asp	Pro	Trp	Val	Arg
2750						2755					2760			
Ala	Leu	Thr	Asp	Arg	Met	Ala	Glu	Gly	Gly	Ala	Glu	Val	Val	Pro
2765						2770					2775			
Leu	Thr	Leu	Asp	Val	Ala	Asp	Ser	Asp	Pro	Ala	Ser	Leu	Arg	Ala
2780						2785					2790			
Arg	Leu	Asp	Glu	Arg	Leu	Arg	Glu	Ala	Val	Gly	Asp	Gly	Pro	Val
2795						2800					2805			
Ala	Gly	Val	Leu	Ser	Leu	Leu	Ala	Leu	Asp	Glu	Arg	Pro	His	Pro
2810						2815					2820			

Asp	His	Pro	Ser	Val	Pro	Val	Gly	Leu	Ala	Leu	Thr	Ser	Ala	Leu
2825						2830					2835			
Thr	Ser	Val	Leu	Thr	Pro	Val	Leu	Thr	Glu	Pro	Asp	Pro	Glu	Gly
2840						2845					2850			
Gly	Ala	Ser	Gly	Gly	Ile	Glu	Ala	Pro	Leu	Trp	Cys	Val	Thr	Arg
2855						2860					2865			
Asp	Ala	Val	Ala	Ala	Ala	Gly	Gly	Asp	Glu	Leu	Gly	Gly	Ala	Ala
2870						2875					2880			
Gln	Ala	Gln	Val	Trp	Gly	Leu	Gly	Arg	Val	Val	Ala	Leu	Glu	His
2885						2890					2895			
Pro	Asp	Arg	Trp	Gly	Gly	Leu	Val	Asp	Leu	Pro	Ala	Val	Cys	Asp
2900						2905					2910			
Asp	Arg	Val	Leu	Ser	Arg	Leu	Met	Ala	Val	Leu	Ala	Gly	Ser	Gly
2915						2920					2925			
Asp	Glu	Asp	Gln	Val	Ala	Val	Arg	Thr	Ser	Gly	Thr	Leu	Val	Arg
2930						2935					2940			
Arg	Leu	Leu	Arg	Ala	Ala	Pro	Thr	Ser	Val	Pro	Ser	Ala	Pro	Trp
2945						2950					2955			
Thr	Pro	Arg	Gly	Thr	Val	Leu	Val	Thr	Gly	Gly	Thr	Gly	Ala	Leu
2960						2965					2970			
Gly	Arg	His	Val	Ala	Arg	His	Leu	Ala	Glu	Arg	Gly	Ala	Glu	Arg
2975						2980					2985			
Leu	Val	Leu	Val	Ser	Arg	Arg	Gly	Ala	Asp	Ala	Pro	Gly	Ala	Ala
2990						2995					3000			
Glu	Thr	Glu	Ala	Glu	Leu	Ser	Ala	Phe	Gly	Ala	Ala	Val	Thr	Leu
3005						3010					3015			
Val	Ala	Cys	Asp	Val	Ala	Asp	Arg	Asp	Ala	Leu	Gly	Thr	Leu	Val
3020						3025					3030			
Ala	Arg	Leu	Ala	Ala	Asp	Gly	Thr	Pro	Val	Arg	Ala	Val	Val	His
3035						3040					3045			
Ala	Ala	Gly	Val	Ser	Gln	Pro	Pro	Gly	Thr	Gly	Thr	Asp	Leu	Pro
3050						3055					3060			
Gly	Phe	Ala	Arg	Val	Val	Ala	Ala	Lys	Thr	Ala	Gly	Ala	Val	His
3065						3070					3075			
Leu	Asp	Ala	Leu	Phe	Asp	Ala	Pro	Asp	Ser	Leu	Asp	Ala	Phe	Val
3080						3085					3090			
Leu	Phe	Ser	Ser	Ile	Ala	Gly	Val	Trp	Gly	Ser	Gly	Gly	Gln	Gly
3095						3100					3105			
Ala	Tyr	Ser	Ala	Ala	Asn	Thr	Phe	Leu	Asp	Thr	Leu	Ala	Glu	Arg
3110						3115					3120			

Arg	Arg	Ala	Arg	Gly	Leu	Ala	Ala	Thr	Ala	Ile	Ala	Trp	Gly	Pro
3125						3130					3135			
Trp	Ala	Asp	Gly	Gly	Met	Ala	Thr	Glu	Gly	Asp	Ala	Glu	Glu	Gln
3140						3145					3150			
Leu	Ser	Arg	Arg	Gly	Leu	Pro	Pro	Met	Asp	Arg	Ala	Thr	Asn	Leu
3155						3160					3165			
Leu	Ala	Leu	Glu	Arg	Ala	Val	Ala	Gly	Arg	Glu	Ala	Ala	Leu	Thr
3170						3175					3180			
Val	Ala	Asp	Val	Asp	Trp	Ala	Arg	Phe	Ala	Pro	Val	Phe	Ala	Ala
3185						3190					3195			
Ala	Arg	Pro	Arg	Pro	Leu	Ile	Gly	Asp	Leu	Pro	Glu	Val	Arg	Asp
3200						3205					3210			
Ala	Leu	Arg	Gly	Asp	Thr	Pro	Ala	Gly	Glu	Gly	Pro	Ala	Glu	Thr
3215						3220					3225			
Ala	Ser	Ser	Ala	Val	Leu	Arg	Arg	Leu	Thr	Glu	Leu	Thr	Gly	Ala
3230						3235					3240			
Asp	Arg	Glu	Thr	Ala	Leu	Leu	Asp	Leu	Val	Arg	Glu	His	Ala	Ala
3245						3250					3255			
Thr	Ala	Leu	Gly	His	Thr	Ser	Ala	Asp	Ala	Val	Ala	Ala	Glu	Arg
3260						3265					3270			
Ala	Phe	Lys	Asp	Leu	Gly	Phe	Asp	Ser	Leu	Thr	Ala	Val	Glu	Leu
3275						3280					3285			
Arg	Asn	Arg	Leu	Gly	Ala	Ala	Cys	Gly	Leu	Arg	Leu	Pro	Ser	Ser
3290						3295					3300			
Leu	Val	Phe	Asp	Tyr	Pro	Asn	Pro	Gln	Ala	Leu	Thr	Arg	His	Leu
3305						3310					3315			
Leu	His	Thr	Leu	Phe	Pro	Glu	Gly	Ala	Gly	Gly	Pro	Asp	Val	Pro
3320						3325					3330			
Ala	Leu	Asp	Thr	Asp	Pro	Gln	Glu	Ala	Glu	Leu	Arg	Arg	Thr	Leu
3335						3340					3345			
Ala	Ala	Ile	Pro	Leu	Gly	Arg	Ile	Arg	Glu	Ala	Gly	Leu	Leu	Asp
3350						3355					3360			
Thr	Leu	Leu	Arg	Leu	Ala	Gly	Pro	Asp	Thr	Pro	Ala	Pro	Ala	Thr
3365						3370					3375			
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Gly	Ala	Gly	Val	Leu	Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	275	280	285	
Gly	His	His	Ile	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Val	Asn	Gln	Asp	290	295	300	
Gly	Ala	Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ala	Gln	Gln	Lys	305	310	315	320

Val Ile Arg Gln Ala Leu Glu Ser Ala Arg Leu Thr Pro Ala Asp Ile  
325 330 335  
Asp Ala Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile  
340 345 350  
Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gly Arg Thr Asp Gly  
355 360 365  
Arg Pro Leu Trp Leu Gly Ser Leu Lys Ser Asn Leu Gly His Thr Gln  
370 375 380  
Asn Ala Ala Gly Val Ala Gly Ile Ile Lys Met Val Met Ala Met Arg  
385 390 395 400  
His Gly Val Leu Pro Arg Thr Leu His Val Asp Glu Pro Thr Ser His  
405 410 415  
Val Asp Trp Ser Thr Gly Ala Val Ala Leu Leu Thr Glu Pro Val Glu  
420 425 430  
Trp Pro Glu Thr Gly Arg Pro Arg Arg Val Gly Val Ser Ala Phe Gly  
435 440 445  
Val Ser Gly Thr Asn Val His Thr Ile Ile Glu Gln Ala Pro Ala Pro  
450 455 460  
Ala Pro Ala Pro Val Ala Asp Asp Thr Ser Glu Pro Ala Pro Ala Ala  
465 470 475 480  
Arg Pro Lys Ala Leu Pro Trp Leu Leu Ser Ala Lys Gly Arg Asp Ala  
485 490 495  
Leu Arg Asp Arg Ala Ala Gln Leu Leu Ala Tyr Ala Glu Glu His Pro  
500 505 510  
Asp Leu Arg Pro Val Asp Ile Ala Gly Ser Leu Ala Val Gly Arg Pro  
515 520 525  
Ser Phe Glu Asp Arg Ala Ala Val Val Ala Ala Asp Arg Glu Gly Leu  
530 535 540  
Leu Ala Gly Leu Ala Ala Leu Ala Asp Gly Gly Ser Ala Thr Gly Leu  
545 550 555 560  
Val Lys Gly Ser Ser Gln Leu Val Gly Lys Leu Ala Phe Leu Phe Thr  
565 570 575  
Gly Gln Gly Ser Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr Glu Thr  
580 585 590  
Tyr Pro Val Phe Ala Gln Ala Leu Asp Ala Val Cys Glu Arg Leu Glu  
595 600 605  
Leu Pro Leu Lys Asn Val Leu Phe Gly Thr Asp Ser Ala Ala Leu Asp  
610 615 620  
Glu Thr Ser Tyr Thr Gln Pro Ala Leu Phe Ala Val Glu Val Ala Leu  
625 630 635 640

Phe	Arg	Leu	Val	Glu	Ser	Trp	Gly	Leu	Lys	Pro	Asp	Phe	Leu	Ala	Gly		
				645					650					655			
His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val	Phe	Ser		
			660					665					670				
Leu	Asp	Asp	Ala	Cys	Ala	Leu	Val	Ser	Ala	Arg	Gly	Arg	Leu	Met	Gly		
		675					680					685					
Ala	Leu	Pro	Gly	Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala	Ser	Glu	Asp		
	690					695					700						
Glu	Val	Leu	Pro	Leu	Leu	Thr	Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn		
705					710					715					720		
Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala		
			725					730						735			
Ile	Ala	Glu	Ser	Phe	Ala	Asp	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser		
			740					745					750				
His	Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met	Leu	Glu	Asp	Phe	Arg		
		755					760					765					
Val	Val	Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Val	Val		
	770					775					780						
Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Ser	Asp	Glu	Met	Gly	Ser	Ala	Asp		
785					790					795					800		
Phe	Trp	Val	Arg	His	Val	Arg	Glu	Thr	Val	Arg	Phe	Leu	Asp	Gly	Ile		
			805					810						815			
Arg	Thr	Leu	Glu	Ala	Ala	Gly	Val	Thr	Lys	Tyr	Val	Glu	Leu	Gly	Pro		
		820						825					830				
Asp	Gly	Val	Leu	Ser	Ala	Leu	Ala	Gln	Asp	Cys	Val	Ser	Gly	Glu	Asp		
	835					840						845					
Ser	Val	Phe	Ile	Pro	Val	Leu	Arg	Lys	Ala	Arg	Pro	Glu	Ala	Glu	Thr		
	850					855					860						
Val	Ala	Thr	Ala	Leu	Ala	Ser	Ala	His	Val	His	Gly	Ile	Pro	Val	Asp		
865				870					875						880		
Trp	Arg	Ala	Tyr	Phe	Ala	Gly	Thr	Gly	Ala	Gln	Arg	Val	Asp	Leu	Pro		
			885					890						895			
Thr	Tyr	Pro	Phe	Gln	Arg	Gln	Arg	Tyr	Trp	Ile	Glu	Pro	Gly	Gly	Arg		
		900						905					910				
Ala	Gly	Asp	Val	Gly	Ala	Ala	Gly	Leu	Glu	Glu	Ala	Gly	His	Pro	Leu		
	915						920					925					
Leu	Gly	Ala	Ala	Val	Pro	Leu	Ala	Asp	Ser	Glu	Gly	Phe	Leu	Phe	Thr		
	930				935						940						
Gly	Arg	Leu	Gly	Arg	Thr	Ser	His	Pro	Trp	Leu	Ala	Asp	His	Ala	Val		
945				950						955					960		



Met	Asp	Thr	Val	Leu	Leu	Pro	Gly	Thr	Ala	Phe	Val	Asp	Leu	Ala	Val	965	970	975
Arg	Ala	Gly	Asp	Gln	Val	Gly	Cys	Asp	Val	Val	Glu	Glu	Leu	Thr	Leu	980	985	990
Glu	Ala	Pro	Leu	Val	Leu	Pro	Glu	Arg	Gly	Ala	Val	Gln	Ile	Gln	Met	995	1000	1005
His	Val	Gly	Ala	Pro	Asp	Ala	Asp	Gly	Thr	Gly	Arg	Arg	Thr	Phe		1010	1015	1020
Thr	Leu	Ser	Ser	Arg	Thr	Gln	Asp	Gly	Ala	Ala	Asp	Glu	Pro	Trp		1025	1030	1035
Thr	Arg	His	Ala	Gly	Gly	Val	Leu	Ala	His	Gly	Ala	Ala	Gln	Pro		1040	1045	1050
Ala	Phe	Ala	Pro	Val	Gln	Trp	Pro	Pro	Ala	Gly	Ala	Glu	Pro	Ile		1055	1060	1065
Pro	Thr	Glu	Ser	Leu	Tyr	Ala	Asp	Leu	Ala	Glu	Val	Gly	Met	Gly		1070	1075	1080
Tyr	Gly	Pro	Ala	Phe	Arg	Gly	Leu	Thr	Ala	Ala	Trp	Arg	His	Gly		1085	1090	1095
Glu	Ser	Val	Tyr	Val	Glu	Val	Ala	Leu	Pro	Glu	Glu	Thr	Ala	Ser		1100	1105	1110
Thr	Ala	Arg	Asp	Phe	Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Ala		1115	1120	1125
Leu	His	Ala	Leu	Gly	Leu	Gly	Val	Leu	Gly	Gly	Val	Glu	Gly	Glu		1130	1135	1140
Gly	Arg	Leu	Pro	Phe	Ala	Trp	Ser	Gly	Val	Thr	Leu	His	Ala	Ala		1145	1150	1155
Gly	Ala	Asp	Ala	Leu	Arg	Val	His	Leu	Ala	Pro	Ala	Gly	Ala	His		1160	1165	1170
Gly	Val	Arg	Leu	Glu	Ile	Ala	Asp	Ala	Ala	Gly	Ala	Pro	Val	Ala		1175	1180	1185
Thr	Val	Asp	Ser	Leu	Val	Leu	Arg	Thr	Val	Ser	Glu	Glu	Gln	Val		1190	1195	1200
Arg	Ala	Ala	Arg	Thr	Ala	Tyr	His	Glu	Ser	Val	Phe	Arg	Ala	Glu		1205	1210	1215
Trp	Thr	Ala	Leu	Pro	Thr	Ala	Ala	Glu	Ser	Ala	Ala	Thr	His	Gly		1220	1225	1230
Arg	Trp	Ala	Val	Leu	Gly	Ala	Ala	Asp	Ala	Gly	Asp	Ser	Pro	Arg		1235	1240	1245
Asp	Ala	Leu	Val	Asn	Gly	Leu	Leu	Gly	His	Leu	Pro	Gly	Glu	Val		1250	1255	1260

Ala Arg Tyr Ala Asp Leu	Ala Glu Leu Ala Ala Ala	Val Glu Ala
1265	1270	1275
Gly Ala Ala Thr Pro Asp	Ala Val Phe Ala Ala Tyr	Ala Arg Ser
1280	1285	1290
Asp Asp Asp Gly Pro Ala	Ala Pro Asp Val Ser	Ala Pro Asp Val
1295	1300	1305
Ser Ala Gln Ala Val His	Ala Ala Thr His Asp	Ala Leu Ala Leu
1310	1315	1320
Val Gln Thr Trp Phe Gly	Glu Glu Pro Phe Ala Gly	Asp Arg Phe
1325	1330	1335
Ala Ala Thr Arg Leu Val	Val Leu Thr Arg Gly	Ala Val Ala Ala
1340	1345	1350
Gly Asp Gly Asp Thr Val	Thr Asp Pro Ala His	Ala Ala Val Trp
1355	1360	1365
Gly Leu Leu Arg Ser Ala	Gln Ser Glu Tyr Pro	Asp Arg Leu Leu
1370	1375	1380
Leu Ile Asp Thr Asp Gly	Val Glu Asp Ser Val	His Ala Leu Pro
1385	1390	1395
Ala Val Leu Ala Val Gly	Glu Pro Gln Leu Ala	Leu Arg Ala Gly
1400	1405	1410
Ser Val His Ala Leu Arg	Leu Ala Arg Val Ala	Ala Ala Thr Pro
1415	1420	1425
Glu Asp Ala Ala Ala Pro	Thr Gln Tyr Ala Pro	Gly Ser Thr Val
1430	1435	1440
Leu Ile Thr Gly Ala Gly	Gly Met Leu Gly Gly	Leu Ile Ala Arg
1445	1450	1455
Arg Leu Val Ala Glu His	Gly Val Arg His Leu	Leu Leu Val Gly
1460	1465	1470
Arg Arg Gly Ala Ala Ala	Pro Gly Ala Glu Gln	Leu Ser Ala Glu
1475	1480	1485
Leu Ala Glu Ala Gly Ala	Ser Val Thr Trp Ala	Ala Cys Asp Val
1490	1495	1500
Ala Asp Arg Asp Ala Leu	Ser Ala Val Leu His	Ala Ile Pro Ala
1505	1510	1515
Glu His Pro Leu Gly Ala	Val Val His Thr Ala	Gly Val Leu Asp
1520	1525	1530
Asp Gly Val Ile Ala Ser	Leu Thr Pro Glu Arg	Leu Ser Ala Val
1535	1540	1545
Leu Arg Pro Lys Val Asp	Ala Ala Cys Asn Leu	His Glu Leu Thr
1550	1555	1560

Arg	His	Leu	Asp	Leu	Thr	Ala	Phe	Val	Leu	Phe	Ser	Ser	Ile	Gly
1565						1570					1575			
Gly	Val	Phe	Gly	Gly	Pro	Gly	Gln	Gly	Asn	Tyr	Ala	Ala	Ala	Asn
1580						1585					1590			
Val	Phe	Leu	Asp	Ala	Leu	Ala	Gln	His	Arg	Arg	Ser	Gln	Gly	Leu
1595						1600					1605			
Ala	Ala	Thr	Ser	Leu	Ala	Trp	Ala	Leu	Trp	Ala	Asp	Ser	Thr	Gly
1610						1615					1620			
Met	Ala	Gly	Ser	Leu	Asp	Glu	Ala	Asp	Ile	Ser	Arg	Met	Arg	Arg
1625						1630					1635			
Gly	Gly	Leu	Pro	Pro	Leu	Thr	Thr	Ala	Glu	Gly	Leu	Glu	Leu	Phe
1640						1645					1650			
Asp	Leu	Ala	His	Arg	Ile	Asp	Glu	Ala	Ala	Pro	Val	Leu	Met	Arg
1655						1660					1665			
Ala	Asp	Leu	Thr	Ala	Leu	Arg	Thr	Gln	Ala	Gln	Ala	Gly	Thr	Met
1670						1675					1680			
Ser	Pro	Leu	Leu	Arg	Gly	Leu	Val	Arg	Val	Pro	Ala	Arg	Arg	Ser
1685						1690					1695			
Ala	Ser	Gly	Ala	Ala	Gly	Thr	Gly	Gly	Glu	Ser	Gly	Leu	Arg	Glu
1700						1705					1710			
Arg	Leu	Ala	Gly	Leu	Ser	Ala	Ala	Glu	Arg	Asp	Arg	Thr	Leu	Leu
1715						1720					1725			
Asp	Leu	Val	Arg	Lys	Gln	Val	Ala	Ala	Ala	Leu	Gly	Tyr	Pro	Gly
1730						1735					1740			
Pro	Ser	Ala	Val	Glu	Pro	Gly	Arg	Ser	Phe	Lys	Glu	Leu	Gly	Phe
1745						1750					1755			
Asp	Ser	Leu	Thr	Ala	Val	Glu	Leu	Arg	Asn	Leu	Leu	Gly	Asp	Ala
1760						1765					1770			
Thr	Gly	Arg	Arg	Leu	Pro	Ala	Thr	Leu	Val	Phe	Asp	Tyr	Pro	Thr
1775						1780					1785			
Ala	Thr	Ala	Leu	Ala	Gly	Tyr	Leu	Arg	Glu	Glu	Ile	Ile	Gly	Asp
1790						1795					1800			
Leu	Ala	Asp	Ala	Val	Thr	Ala	Pro	Ala	Leu	Val	Pro	Ser	Ala	Ala
1805						1810					1815			
Val	Ala	Gly	Ala	Gly	Ala	Gly	Ala	Asp	Asp	Asp	Asp	Pro	Ile	Ala
1820						1825					1830			
Ile	Val	Ala	Met	Ser	Cys	Arg	Phe	Pro	Gly	Gly	Ile	Ala	Ser	Pro
1835						1840					1845			
Glu	Asp	Leu	Trp	Gln	Leu	Leu	Val	Thr	Gly	Arg	Asp	Gly	Ile	Thr
1850						1855					1860			

Gly	Phe	Pro	Ala	Asp	Arg	Gly	Trp	Asp	Leu	Asp	Ser	Leu	Tyr	Ser
1865						1870					1875			
Asp	Asp	Pro	Asp	Arg	Glu	Gly	Thr	Ser	Tyr	Ala	Arg	Glu	Gly	Gly
1880						1885					1890			
Phe	Leu	His	Glu	Ala	Ala	Glu	Phe	Asp	Ala	Ser	Phe	Phe	Gly	Ile
1895						1900					1905			
Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu	Leu
1910						1915					1920			
Leu	Glu	Thr	Thr	Trp	Glu	Thr	Phe	Glu	Arg	Ala	Gly	Ile	Asp	Pro
1925						1930					1935			
Thr	Ser	Leu	Arg	Gly	Ser	Arg	Thr	Gly	Val	Phe	Val	Gly	Ser	Asn
1940						1945					1950			
Ala	Gln	Asp	Tyr	Leu	Gln	Leu	Trp	Leu	Asn	Asp	Ala	Asp	Gly	Leu
1955						1960					1965			
Glu	Gly	His	Leu	Gly	Thr	Gly	Asn	Ala	Ala	Ser	Val	Val	Ser	Gly
1970						1975					1980			
Arg	Leu	Ser	Tyr	Thr	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Val	Thr	Val
1985						1990					1995			
Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Thr	Leu	His	Leu	Ala	Ala
2000						2005					2010			
Gln	Ala	Leu	Arg	Arg	Gly	Glu	Cys	Ser	Met	Ala	Leu	Ala	Gly	Ala
2015						2020					2025			
Val	Thr	Ile	Met	Ser	Thr	Pro	Gly	Ala	Phe	Thr	Glu	Phe	Ser	Arg
2030						2035					2040			
Gln	Arg	Gly	Leu	Ala	Ala	Asp	Gly	Arg	Ile	Lys	Ala	Phe	Ala	Ala
2045						2050					2055			
Ala	Ala	Asp	Gly	Thr	Ser	Trp	Ser	Glu	Gly	Val	Gly	Leu	Leu	Leu
2060						2065					2070			
Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Pro	Val	Leu
2075						2080					2085			
Ala	Val	Val	Arg	Gly	Thr	Ala	Val	Asn	Gln	Asp	Gly	Ala	Ser	Asn
2090						2095					2100			
Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Arg
2105						2110					2115			
Glu	Ala	Leu	Ala	Asp	Ala	Gly	Leu	Ser	Ala	Ala	Glu	Val	Asp	Ala
2120						2125					2130			
Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu
2135						2140					2145			
Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Gly	Arg	Pro	Asp	Asp
2150						2155					2160			

Gln	Pro	Leu	Trp	Leu	Gly	Ser	Val	Lys	Ser	Asn	Ile	Gly	His	Thr
2165						2170					2175			
Gln	Ala	Val	Ala	Gly	Ala	Ala	Gly	Ile	Ile	Lys	Met	Val	Met	Ala
2180						2185					2190			
Met	Arg	His	Gly	Val	Leu	Pro	Gln	Thr	Leu	His	Ile	Asp	Glu	Pro
2195						2200					2205			
Thr	Pro	Tyr	Val	Asp	Trp	Ser	Ala	Gly	Asp	Ile	Ala	Leu	Leu	Thr
2210						2215					2220			
Glu	Gln	Arg	Ala	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Gly
2225						2230					2235			
Val	Ser	Ser	Phe	Gly	Tyr	Ser	Gly	Thr	Asn	Ala	His	Ala	Val	Ile
2240						2245					2250			
Glu	Gln	Ala	Pro	Gln	Asn	Ala	Met	Glu	Arg	Thr	Pro	Gln	Gly	Asp
2255						2260					2265			
Asn	Leu	Pro	Ala	Arg	Thr	Pro	Ala	Thr	Arg	Thr	Leu	Pro	Val	Leu
2270						2275					2280			
Pro	Leu	Leu	Val	Ser	Gly	Arg	Thr	Ala	Pro	Ala	Leu	Arg	Ala	Gln
2285						2290					2295			
Ala	Glu	Arg	Leu	Arg	Pro	Ala	Ala	Thr	Ala	Leu	Ala	Thr	Gly	Thr
2300						2305					2310			
Val	Thr	Asn	Ser	Gly	Ala	Leu	Glu	Ala	Leu	Asp	Leu	Gly	Tyr	Ser
2315						2320					2325			
Leu	Ala	Thr	Ser	Arg	Ala	Ala	Leu	Glu	His	Arg	Ala	Val	Leu	Ile
2330						2335					2340			
Gly	Thr	Pro	Ser	Asp	Gly	Gln	Ala	Leu	Ala	Ser	Arg	Leu	Asp	Ala
2345						2350					2355			
Leu	Ala	Ala	Gly	Glu	Gln	Val	Pro	Gly	Leu	Val	Gln	Gly	Thr	Ala
2360						2365					2370			
Ser	Gly	Gly	Gly	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser	Gln
2375						2380					2385			
Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	Thr	Tyr	Pro	Val	Phe
2390						2395					2400			
Ala	Glu	Ala	Leu	Asp	Ala	Val	Cys	Ala	Arg	Leu	Glu	Leu	Pro	Leu
2405						2410					2415			
Lys	Glu	Val	Leu	Phe	Gly	Ala	Asp	Gly	Ala	Ala	Leu	Asp	Gln	Thr
2420						2425					2430			
Ala	Val	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Ile	Glu	Val	Ala	Leu	Phe
2435						2440					2445			
Arg	Leu	Val	Glu	Ser	Trp	Gly	Leu	Arg	Pro	Asp	Phe	Val	Ala	Gly
2450						2455					2460			

His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val	Phe
2465						2470					2475			
Ser	Leu	Glu	Asp	Ala	Cys	Arg	Leu	Val	Glu	Ala	Arg	Gly	Arg	Leu
2480						2485					2490			
Met	Gln	Ala	Leu	Pro	Gly	Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala
2495						2500					2505			
Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	Asp	Arg	Val	Ser	Ile
2510						2515					2520			
Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp	Glu
2525						2530					2535			
Ala	Asp	Ala	Val	Ala	Ile	Ala	Glu	Ser	Phe	Thr	Gly	Arg	Lys	Ser
2540						2545					2550			
Lys	His	Leu	Ala	Val	Ser	His	Ala	Phe	His	Ser	Pro	His	Met	Asp
2555						2560					2565			
Gly	Met	Leu	Glu	Asp	Phe	Arg	Ala	Val	Ala	Glu	Gly	Leu	Ser	Tyr
2570						2575					2580			
Glu	Ala	Pro	Arg	Ile	Ala	Val	Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu
2585						2590					2595			
Val	Ser	Asp	Glu	Met	Ser	Ser	Ala	Glu	Phe	Trp	Val	Arg	His	Val
2600						2605					2610			
Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Ala	Leu	Glu	Ala
2615						2620					2625			
Ala	Gly	Val	Thr	Thr	Tyr	Val	Glu	Leu	Gly	Pro	Gly	Gly	Val	Leu
2630						2635					2640			
Ser	Ala	Leu	Ala	Gln	Glu	Cys	Val	Ser	Gly	Asp	Gly	Ala	Ala	Phe
2645						2650					2655			
Val	Pro	Val	Leu	Arg	Ser	Gly	Arg	Ser	Glu	Ala	Glu	Thr	Val	Val
2660						2665					2670			
Thr	Ala	Leu	Ala	Gln	Ala	His	Val	Arg	Gly	Val	Glu	Val	Asp	Trp
2675						2680					2685			
Ala	Ala	Phe	Phe	Ala	Gly	Thr	Gly	Ala	Glu	Arg	Ile	Asp	Leu	Pro
2690						2695					2700			
Thr	Tyr	Ala	Phe	Gln	Arg	Gln	Arg	Tyr	Trp	Pro	Glu	Thr	Val	Leu
2705						2710					2715			
Ser	Thr	Val	Gly	Pro	Val	Val	Ala	Glu	Ala	Val	Asp	Ala	Val	Asp
2720						2725					2730			
Ala	Arg	Phe	Trp	Asp	Ala	Val	Glu	Arg	Glu	Asp	Leu	Ala	Ser	Leu
2735						2740					2745			
Val	Ala	Glu	Leu	Asp	Val	Asp	Glu	Thr	Pro	Leu	Gly	Glu	Val	Val
2750						2755					2760			

Pro	Ala	Leu	Ser	Ala	Trp	Arg	Arg	Glu	Arg	Arg	Ala	Gln	Ser	Glu
2765						2770					2775			
Val	Asp	Gly	Trp	Arg	Tyr	Arg	Val	Ser	Trp	Lys	Pro	Leu	Ala	Asp
2780						2785					2790			
Ala	Ser	Thr	Ala	Arg	Leu	Ser	Gly	Ser	Trp	Val	Val	Val	Ser	Pro
2795						2800					2805			
Asp	Lys	Gly	Val	Asp	Asp	Ser	Ala	Val	Val	Ala	Gly	Leu	Ala	Gly
2810						2815					2820			
Arg	Gly	Ala	Glu	Val	Arg	Arg	Val	Val	Val	Glu	Ala	Gly	Val	Asp
2825						2830					2835			
Arg	Ser	Ala	Leu	Ala	Gly	Leu	Leu	Ala	Asp	Ala	Gly	Ser	Ala	Ala
2840						2845					2850			
Gly	Val	Val	Ser	Leu	Leu	Gly	Leu	Asp	Glu	Ser	Glu	Gly	Leu	Leu
2855						2860					2865			
Gly	Thr	Val	Gly	Leu	Val	Gln	Ala	Leu	Gly	Asp	Ala	Gly	Val	Glu
2870						2875					2880			
Ala	Pro	Leu	Trp	Cys	Leu	Thr	Arg	Gly	Ala	Val	Ser	Val	Gly	Arg
2885						2890					2895			
Ser	Asp	Arg	Leu	Val	Ser	Pro	Val	Gln	Ala	Gln	Val	Trp	Gly	Leu
2900						2905					2910			
Gly	Arg	Val	Ala	Ala	Leu	Glu	Val	Pro	Glu	His	Trp	Gly	Gly	Leu
2915						2920					2925			
Val	Asp	Leu	Pro	Glu	Val	Leu	Asp	Glu	Arg	Ala	Val	Ala	Arg	Leu
2930						2935					2940			
Val	Gly	Val	Leu	Ala	Gly	Ser	Gly	Glu	Asp	Gln	Val	Ala	Val	Arg
2945						2950					2955			
Ser	Ser	Gly	Val	Phe	Gly	Arg	Arg	Leu	Val	Arg	Ala	Pro	Arg	Ala
2960						2965					2970			
Glu	Gly	Ala	Ala	Ala	Trp	Thr	Pro	Thr	Gly	Thr	Val	Leu	Val	Thr
2975						2980					2985			
Gly	Gly	Thr	Gly	Val	Leu	Gly	Gly	Arg	Val	Ala	Arg	Trp	Leu	Ala
2990						2995					3000			
Gly	Ala	Gly	Ala	Glu	Arg	Leu	Val	Leu	Thr	Ser	Arg	Arg	Gly	Pro
3005						3010					3015			
Asp	Ala	Pro	Gly	Ala	Ala	Glu	Leu	Val	Glu	Glu	Leu	Thr	Thr	Gly
3020						3025					3030			
Phe	Gly	Val	Glu	Val	Ser	Ile	Val	Ala	Cys	Asp	Ala	Ala	Asp	Arg
3035						3040					3045			
Asp	Ala	Leu	Arg	Ala	Leu	Leu	Ser	Ala	Glu	Ala	Gly	Thr	Leu	Thr
3050						3055					3060			

Ala Val	Ile His Thr Ala	Gly Val	Leu Asp Asp Gly	Val Leu Asp
3065		3070	3075	
Ala Leu	Thr Pro Asp Arg	Ile Asp	Ser Val Leu Arg	Ala Lys Ala
3080		3085	3090	
Val Ser	Ala Leu Asn Leu	His Glu	Leu Thr Ala Glu	Leu Asp Ile
3095		3100	3105	
Glu Leu	Ser Ala Phe Val	Leu Phe	Ser Ser Met Ser	Gly Thr Val
3110		3115	3120	
Gly Ala	Ala Gly Gln Ala	Asn Tyr	Ala Ala Ala Asn	Ala Phe Leu
3125		3130	3135	
Asp Ala	Leu Ala Glu Gln	Arg Arg	Ala Asp Gly Leu	Ala Ala Thr
3140		3145	3150	
Ser Leu	Ala Trp Gly Pro	Trp Ala	Glu Gly Gly Met	Ala Ala Asp
3155		3160	3165	
Ala Ala	Leu Glu Ala Arg	Met Arg	Arg Gly Gly Val	Pro Pro Met
3170		3175	3180	
Asp Ala	Glu Leu Ala Leu	Ser Ala	Leu Arg Gln Ala	Ile Gly Ser
3185		3190	3195	
Ala Asp	Ala Ala Leu Thr	Ile Val	Asp Phe Asp Trp	Ala Arg Phe
3200		3205	3210	
Ala Pro	Gly Phe Thr Ala	Val Arg	Ala Gly Asn Leu	Leu Ala Glu
3215		3220	3225	
Leu Pro	Glu Ala Ala Ala	Val Met	Arg Gly Pro Glu	Asn Ala Asp
3230		3235	3240	
Ser Arg	Pro Glu His Ala	Asp Ser	Ser Leu Ala Leu	Arg Leu Gln
3245		3250	3255	
Gly Met	Ala Gln Ala Asp	Gln Glu	Pro Phe Leu Leu	Glu Leu Val
3260		3265	3270	
Arg Ala	Gln Val Ala Glu	Val Leu	Gly His Ser Gly	Ala Glu Asp
3275		3280	3285	
Ile Glu	Ala Gly Arg Ala	Phe Arg	Glu Ile Gly Phe	Asp Ser Leu
3290		3295	3300	
Thr Ala	Val Glu Leu Arg	Asn Arg	Leu Gly Ala Ala	Ala Glu Leu
3305		3310	3315	
Arg Leu	Pro Ala Thr Leu	Val Tyr	Asp Tyr Pro Thr	Pro Ala Ala
3320		3325	3330	
Leu Ala	Val His Leu Arg	Thr Glu	Leu Leu Gly Lys	Gln Val Val
3335		3340	3345	
Val Ser	Gly Pro Val Ser	Lys Val	Val Asp Asp Asp	Pro Ile Ala
3350		3355	3360	



Ile	Val	Ser	Met	Ser	Cys	Arg	Phe	Pro	Gly	Gly	Val	Arg	Thr	Pro
3365						3370					3375			
Glu	Asp	Leu	Trp	Glu	Leu	Leu	Ser	Thr	Gly	Gly	Asp	Ala	Ile	Ser
3380						3385					3390			
Asp	Leu	Pro	Leu	Asp	Arg	Gly	Trp	Asp	Ile	Asp	Ala	Leu	Tyr	Asp
3395						3400					3405			
Ala	Asp	Pro	Ser	Thr	Gln	Gly	Thr	Ser	Tyr	Ala	Arg	Ala	Gly	Gly
3410						3415					3420			
Phe	Leu	Tyr	Asp	Ala	Ala	Asp	Phe	Asp	Ala	Asp	Phe	Phe	Gly	Ile
3425						3430					3435			
Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu	Leu
3440						3445					3450			
Leu	Glu	Thr	Ser	Trp	Glu	Ala	Phe	Glu	Arg	Ala	Gly	Ile	Asp	Pro
3455						3460					3465			
Glu	Thr	Leu	Arg	Gly	Ser	Gln	Ala	Gly	Val	Phe	Val	Gly	Thr	Asn
3470						3475					3480			
Gly	Gln	Asp	Tyr	Leu	Ser	Val	Leu	Leu	Glu	Glu	Pro	Glu	Gly	Leu
3485						3490					3495			
Glu	Gly	His	Leu	Gly	Thr	Gly	Asn	Ala	Ala	Ser	Val	Val	Ser	Gly
3500						3505					3510			
Arg	Leu	Ser	Tyr	Val	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Val	Thr	Val
3515						3520					3525			
Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Trp	Ala	Ile
3530						3535					3540			
Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Ser	Leu	Ala	Leu	Ala	Gly	Gly
3545						3550					3555			
Val	Thr	Val	Met	Ser	Thr	Pro	Gly	Thr	Phe	Ile	Glu	Phe	Ser	Arg
3560						3565					3570			
Gln	Arg	Gly	Leu	Ala	Glu	Asp	Gly	Arg	Ile	Lys	Ala	Phe	Ala	Ala
3575						3580					3585			
Ala	Ala	Asp	Gly	Thr	Gly	Trp	Gly	Glu	Gly	Val	Gly	Met	Leu	Leu
3590						3595					3600			
Val	Glu	Arg	Leu	Ser	Asp	Ala	Glu	Arg	Asn	Gly	His	Pro	Val	Leu
3605						3610					3615			
Ala	Ile	Val	Arg	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala	Ser	Asn
3620						3625					3630			
Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Arg
3635						3640					3645			
Ala	Ala	Leu	Ala	Ser	Ala	Gly	Leu	Ser	Ala	Ala	Asp	Val	Asp	Ala
3650						3655					3660			

Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu
3665						3670					3675			
Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Asp	Arg	Pro	Ala	Asp
3680						3685					3690			
Arg	Pro	Leu	Gln	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly	His	Thr
3695						3700					3705			
Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Val	Ile	Lys	Met	Val	Leu	Ala
3710						3715					3720			
Met	Glu	His	Gly	Val	Leu	Pro	Gln	Ser	Leu	His	Ile	Asp	Ala	Pro
3725						3730					3735			
Ser	Pro	Gln	Val	Asp	Trp	Glu	Ala	Gly	Asp	Ile	Ala	Leu	Leu	Thr
3740						3745					3750			
Glu	Gln	Arg	Gln	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Gly
3755						3760					3765			
Val	Ser	Ser	Phe	Gly	Phe	Ser	Gly	Thr	Asn	Ala	His	Thr	Ile	Ile
3770						3775					3780			
Glu	Gln	Ala	Pro	Ala	Ser	Thr	Glu	Thr	Asp	Arg	Ala	Glu	Ser	Gly
3785						3790					3795			
Ser	Val	Glu	Pro	Asp	Phe	Val	Pro	Leu	Met	Leu	Ser	Ala	Lys	Ser
3800						3805					3810			
Asp	Val	Ala	Leu	Arg	Ala	Gln	Ala	Ala	Ser	Leu	Arg	Ala	Arg	Leu
3815						3820					3825			
Ile	Ala	Ala	Pro	Asp	Met	Arg	Leu	Ser	Asp	Val	Gly	Ser	Thr	Leu
3830						3835					3840			
Thr	Thr	Gly	Arg	Ser	Ala	Phe	Glu	Arg	Arg	Ala	Ala	Leu	Val	Ala
3845						3850					3855			
Gly	Gly	Arg	Glu	Gly	Leu	Leu	Ala	Gly	Leu	Glu	Ala	Leu	Ala	Asp
3860						3865					3870			
Gly	Gly	Ser	Ala	Ala	Gly	Leu	Val	Glu	Gly	Ser	Pro	Val	Ser	Gly
3875						3880					3885			
Lys	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly
3890						3895					3900			
Met	Gly	Arg	Glu	Leu	Tyr	Glu	Ala	Tyr	Pro	Val	Phe	Ala	Asp	Ala
3905						3910					3915			
Leu	Asp	Ala	Val	Cys	Val	Arg	Leu	Glu	Leu	Pro	Leu	Met	Asp	Val
3920						3925					3930			
Leu	Phe	Gly	Ala	Asp	Ala	Gly	Leu	Leu	Asn	Glu	Thr	Ala	Tyr	Thr
3935						3940					3945			
Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Val
3950						3955					3960			

Glu	Ser	Trp	Gly	Leu	Arg	Pro	Asp	Phe	Leu	Ala	Gly	His	Ser	Ile
3965						3970					3975			
Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	Val	Leu	Ser	Leu	Asp
3980						3985					3990			
Asp	Ala	Cys	Ala	Leu	Val	Glu	Ala	Arg	Gly	Arg	Leu	Met	Gly	Ala
3995						4000					4005			
Leu	Pro	Ala	Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala	Ser	Glu	Asp
4010						4015					4020			
Glu	Val	Leu	Pro	Leu	Leu	Thr	Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile
4025						4030					4035			
Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala
4040						4045					4050			
Val	Ala	Ile	Val	Glu	Ser	Phe	Thr	Gly	Arg	Lys	Ser	Lys	Arg	Leu
4055						4060					4065			
Ser	Val	Ser	His	Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met	Leu
4070						4075					4080			
Glu	Asp	Phe	Arg	Val	Val	Ala	Glu	Gly	Leu	Ser	Tyr	Asp	Ala	Pro
4085						4090					4095			
Arg	Ile	Pro	Val	Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Thr	Asp
4100						4105					4110			
Glu	Met	Gly	Ser	Ala	Asp	Phe	Trp	Val	Arg	His	Val	Arg	Glu	Ala
4115						4120					4125			
Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Ala	Leu	Glu	Ala	Ala	Gly	Val
4130						4135					4140			
Thr	Thr	Tyr	Val	Glu	Leu	Gly	Pro	Asp	Gly	Val	Leu	Ser	Ala	Met
4145						4150					4155			
Ala	Gln	Glu	Cys	Val	Thr	Glu	Gly	Gly	Ala	Ala	Phe	Val	Pro	Val
4160						4165					4170			
Leu	Arg	Lys	Gly	Arg	Pro	Glu	Ala	Glu	Thr	Val	Met	Ala	Thr	Leu
4175						4180					4185			
Gly	Gln	Ala	His	Val	Arg	Gly	Val	Ala	Val	Asp	Trp	His	Ser	Val
4190						4195					4200			
Tyr	Gly	Thr	Gly	Ala	Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Ser	Phe
4205						4210					4215			
Gln	Arg	Gln	Arg	Tyr	Trp	Pro	Ala	Ala	Ser	Ser	Thr	Ala	Gly	Gly
4220						4225					4230			
Ser	Val	Asp	Arg	Ser	Val	Asp	Ala	Val	Asp	Ala	Arg	Phe	Trp	Asp
4235						4240					4245			
Ala	Val	Glu	Arg	Glu	Asp	Leu	Ala	Ser	Leu	Ala	Ala	Glu	Leu	Asp
4250						4255					4260			

Leu	Asp	Asp	Asp	Ala	Pro	Phe	Ser	Glu	Leu	Ala	Pro	Ala	Leu	Ser
4265						4270					4275			
Ala	Trp	Arg	Arg	Glu	Arg	Arg	Ala	Leu	Ser	Glu	Val	Asp	Gly	Trp
4280						4285					4290			
Arg	Tyr	Arg	Val	Ser	Trp	Lys	Pro	Leu	Ala	Asp	Val	Ser	Ala	Ser
4295						4300					4305			
Gly	Leu	Ser	Gly	Ser	Trp	Val	Val	Ile	Ser	Pro	Ala	Gly	Gly	Val
4310						4315					4320			
Asp	Asp	Ser	Ala	Val	Val	Gly	Ala	Leu	Val	Gly	Arg	Gly	Ala	Glu
4325						4330					4335			
Val	Arg	Arg	Val	Val	Val	Glu	Ala	Gly	Val	Asp	Arg	Ser	Ala	Leu
4340						4345					4350			
Ala	Gly	Leu	Leu	Ala	Asp	Ala	Gly	Ser	Ala	Ala	Gly	Val	Val	Ser
4355						4360					4365			
Leu	Leu	Gly	Leu	Asp	Glu	Ser	Glu	Gly	Leu	Leu	Gly	Thr	Val	Gly
4370						4375					4380			
Leu	Val	Gln	Ala	Leu	Gly	Asp	Ala	Gly	Val	Glu	Ala	Pro	Leu	Trp
4385						4390					4395			
Cys	Leu	Thr	Arg	Gly	Ala	Val	Ser	Val	Gly	Arg	Ser	Asp	Arg	Leu
4400						4405					4410			
Val	Ser	Pro	Val	Gln	Ala	Gln	Val	Trp	Gly	Leu	Gly	Arg	Val	Ala
4415						4420					4425			
Ala	Leu	Glu	Val	Pro	Glu	Arg	Trp	Gly	Gly	Leu	Ile	Asp	Leu	Pro
4430						4435					4440			
Glu	Val	Leu	Asp	Glu	Arg	Ala	Val	Ser	Arg	Leu	Val	Gly	Val	Leu
4445						4450					4455			
Ser	Gly	Gly	Gly	Ser	Gly	Glu	Asp	Gln	Val	Ala	Val	Arg	Ser	Ser
4460						4465					4470			
Gly	Val	Phe	Gly	Arg	Arg	Leu	Val	Arg	Ala	Pro	Arg	Ala	Glu	Gly
4475						4480					4485			
Ala	Ser	Ala	Trp	Ser	Pro	Thr	Gly	Thr	Val	Leu	Val	Thr	Gly	Gly
4490						4495					4500			
Thr	Gly	Val	Leu	Gly	Gly	Arg	Val	Ala	Arg	Trp	Leu	Ala	Gly	Ala
4505						4510					4515			
Gly	Ala	Glu	Arg	Leu	Val	Leu	Thr	Ser	Arg	Arg	Gly	Pro	Asp	Ala
4520						4525					4530			
Pro	Gly	Ala	Ala	Glu	Leu	Val	Glu	Glu	Leu	Ala	Gly	Ser	Gly	Val
4535						4540					4545			
Glu	Val	Ser	Val	Val	Ala	Cys	Asp	Ala	Ala	Asp	Arg	Asp	Ala	Leu
4550						4555					4560			

Arg	Ala	Leu	Leu	Ser	Ala	Glu	Ala	Gly	Thr	Leu	Thr	Ala	Val	Ile
4565						4570					4575			
His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Val	Leu	Asp	Ala	Leu	Thr
4580						4585					4590			
Pro	Asp	Arg	Ile	Asp	Ser	Val	Leu	Arg	Ala	Lys	Ala	Val	Ser	Ala
4595						4600					4605			
Ile	Asn	Leu	His	Glu	Leu	Thr	Ala	Glu	Leu	Gly	Ile	Glu	Leu	Ser
4610						4615					4620			
Ala	Phe	Val	Leu	Phe	Ser	Ser	Val	Thr	Gly	Thr	Trp	Gly	Thr	Ala
4625						4630					4635			
Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Asn	Ala	Tyr	Leu	Asp	Ala	Leu
4640						4645					4650			
Ala	Glu	Gln	Arg	Arg	Ala	Asp	Gly	Leu	Ala	Ala	Thr	Ser	Ile	Ala
4655						4660					4665			
Trp	Gly	Pro	Trp	Ala	Glu	Gly	Gly	Met	Ala	Ala	Asp	Ala	Ala	Leu
4670						4675					4680			
Glu	Ala	Arg	Met	Arg	Arg	Gly	Gly	Val	Pro	Pro	Met	Lys	Gly	Glu
4685						4690					4695			
Ala	Ala	Val	Asn	Ala	Leu	Gln	Arg	Ala	Leu	Asn	Ala	Asn	Asp	Thr
4700						4705					4710			
Val	Val	Thr	Val	Val	Asp	Val	Glu	Trp	Glu	Arg	Phe	Ala	Pro	Gly
4715						4720					4725			
Phe	Thr	Ala	Ala	Arg	Ala	Ser	Thr	Leu	Leu	Ala	Glu	Leu	Pro	Glu
4730						4735					4740			
Ala	Gln	Arg	Ala	Leu	Ala	Pro	Gln	Glu	Gly	Asp	Glu	Gly	Gln	Asp
4745						4750					4755			
Asp	Gly	Ala	Val	His	Gly	Arg	Gly	Gly	His	Ser	Leu	Ala	Glu	Arg
4760						4765					4770			
Leu	Ala	Glu	Leu	Ser	Ala	Ala	Glu	Arg	Asp	Arg	Leu	Leu	Leu	Gly
4775						4780					4785			
Leu	Val	Arg	Lys	Glu	Val	Ala	Ala	Val	Leu	Gly	His	Ala	Gly	Val
4790						4795					4800			
Glu	Ser	Ile	Gly	Ala	Ala	Arg	Ala	Phe	Lys	Glu	Leu	Gly	Phe	Asp
4805						4810					4815			
Ser	Leu	Thr	Ala	Val	Glu	Leu	Arg	Asn	Arg	Leu	Gly	Ala	Val	Thr
4820						4825					4830			
Gly	Leu	Arg	Leu	Pro	Ala	Thr	Leu	Ile	Tyr	Asp	Tyr	Pro	Thr	Ser
4835						4840					4845			
Gly	Ala	Leu	Ala	Glu	Tyr	Leu	Arg	Gly	Glu	Leu	Leu	Gly	Thr	Gln
4850						4855					4860			

Ala Val	Val Ser Gly Pro	Val Ser Asn Ala Val	Ala Val Asp Asp
4865		4870	4875
Asp Pro	Ile Ala Ile Val	Ala Met Ser Cys Arg	Phe Pro Gly Gly
4880		4885	4890
Val Arg	Thr Pro Glu Asp	Leu Trp Gln Leu Leu	Ala Thr Gly Arg
4895		4900	4905
Asp Ala	Ile Gly Glu Phe	Pro Glu Asp Arg Gly	Trp Asp Ala Glu
4910		4915	4920
Ala Leu	Phe Gly Pro Gln	Phe Glu Gln Asp Ala	Pro Tyr Ala Arg
4925		4930	4935
Glu Gly	Gly Phe Leu Tyr	Asp Val Ala Asp Phe	Asp Pro Ala Phe
4940		4945	4950
Phe Gly	Ile Ser Pro Arg	Glu Ala Leu Ala Met	Asp Pro Gln Gln
4955		4960	4965
Arg Leu	Leu Leu Glu Thr	Ser Trp Glu Ala Phe	Glu Arg Ala Gly
4970		4975	4980
Ile Asp	Pro Leu Ser Val	Arg Gly Ser Gln Ala	Gly Val Phe Val
4985		4990	4995
Gly Thr	Asn Gly Gln Asp	Tyr Leu Ser Leu Val	Leu Asn Ser Ala
5000		5005	5010
Asp Gly	Gly Asp Gly Phe	Met Ser Thr Gly Asn	Ser Ala Ser Val
5015		5020	5025
Val Ser	Gly Arg Leu Ser	Tyr Val Phe Gly Leu	Glu Gly Pro Ala
5030		5035	5040
Val Thr	Val Asp Thr Ala	Cys Ser Ala Ser Leu	Val Ala Leu His
5045		5050	5055
Leu Ala	Val Gln Ala Leu	Arg Asn Gly Glu Cys	Ser Leu Ala Leu
5060		5065	5070
Ala Gly	Gly Val Thr Val	Met Ser Thr Pro Gly	Ala Phe Ala Glu
5075		5080	5085
Phe Ser	Arg Gln Arg Gly	Leu Ala Glu Asp Gly	Arg Ile Lys Ala
5090		5095	5100
Phe Ala	Ala Ala Ala Asp	Gly Thr Gly Trp Gly	Glu Gly Val Gly
5105		5110	5115
Met Leu	Leu Val Glu Arg	Leu Ser Asp Ala Arg	Arg Asn Gly His
5120		5125	5130
Pro Val	Leu Ala Leu Val	Arg Gly Ser Ala Val	Asn Gln Asp Gly
5135		5140	5145
Ala Ser	Asn Gly Leu Thr	Ala Pro Asn Gly Pro	Ser Gln Gln Arg
5150		5155	5160

Val	Ile	Arg	Ala	Ala	Leu	Ala	Ser	Ala	Gly	Leu	Ala	Pro	Gly	Asp
5165						5170					5175			
Ile	Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Lys	Leu	Gly	Asp
5180						5185					5190			
Pro	Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Asp	Arg
5195						5200					5205			
Pro	Ala	Asp	Arg	Pro	Leu	Gln	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile
5210						5215					5220			
Gly	His	Thr	Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Leu	Met	Lys	Met
5225						5230					5235			
Val	Leu	Ala	Met	Gln	His	Gly	Val	Leu	Pro	Gln	Thr	Leu	His	Val
5240						5245					5250			
Asp	Glu	Pro	Thr	Pro	His	Val	Asp	Trp	Ser	Ala	Gly	Asp	Ile	Ala
5255						5260					5265			
Leu	Leu	Thr	Glu	Arg	Arg	Glu	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg
5270						5275					5280			
Arg	Ala	Gly	Ile	Ser	Ser	Phe	Gly	Val	Ser	Gly	Thr	Asn	Ala	His
5285						5290					5295			
Thr	Ile	Leu	Glu	Gln	Ala	Pro	Pro	Leu	Thr	Glu	Lys	Asp	Glu	Ala
5300						5305					5310			
Glu	Ala	Ala	Arg	Pro	Glu	Thr	Gly	Ser	Ala	Val	Ser	Ala	Trp	Pro
5315						5320					5325			
Leu	Ala	Gly	Lys	Thr	Glu	Ala	Gly	Leu	Arg	Glu	Gln	Ala	Glu	Arg
5330						5335					5340			
Leu	Leu	Ala	His	Ile	Asp	Ala	His	Ser	Glu	Leu	Arg	Pro	Val	Asp
5345						5350					5355			
Val	Gly	His	Ser	Leu	Ala	Thr	Gly	Arg	Ala	Ala	Phe	Asp	His	Arg
5360						5365					5370			
Ala	Val	Leu	Val	Ala	Gly	Asp	Asp	Arg	Ser	Glu	Phe	Arg	Arg	Ala
5375						5380					5385			
Leu	Ala	Ala	Leu	Ala	Ser	Gly	Glu	Ser	Val	Ala	Gln	Val	Val	Gln
5390						5395					5400			
Gly	Ile	Ala	Arg	Pro	Asp	Gln	Gln	Val	Ala	Phe	Leu	Phe	Thr	Gly
5405						5410					5415			
Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	Thr
5420						5425					5430			
Tyr	Pro	Val	Phe	Ala	Asp	Ala	Leu	Asp	Ala	Val	Cys	Ala	Arg	Leu
5435						5440					5445			
Glu	Leu	Pro	Leu	Lys	Asp	Val	Leu	Phe	Gly	Gly	Asp	Ala	Asp	Arg
5450						5455					5460			

Leu	Asn	Glu	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu
5465						5470					5475			
Val	Ala	Leu	Phe	Arg	Leu	Val	Glu	Ser	Trp	Gly	Val	Arg	Pro	Asp
5480						5485					5490			
Phe	Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val
5495						5500					5505			
Ala	Gly	Val	Phe	Ser	Leu	Asp	Asp	Ala	Cys	Ala	Leu	Val	Glu	Ala
5510						5515					5520			
Arg	Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro	Thr	Gly	Gly	Val	Met	Ile
5525						5530					5535			
Ala	Val	Gln	Ala	Ser	Glu	Ala	Glu	Val	Leu	Pro	Leu	Leu	Thr	Glu
5540						5545					5550			
Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile
5555						5560					5565			
Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Val	Asp	Ala	Phe	Asn
5570						5575					5580			
Asp	Arg	Lys	Ser	Lys	Arg	Leu	Ala	Val	Ser	His	Ala	Phe	His	Ser
5585						5590					5595			
Pro	His	Met	Asp	Gly	Met	Leu	Ala	Asp	Phe	Arg	Lys	Val	Ala	Glu
5600						5605					5610			
Glu	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Ile	Val	Ser	Asn	Leu
5615						5620					5625			
Thr	Gly	Ala	Leu	Val	Thr	Asp	Glu	Met	Gly	Ser	Ala	Asp	Phe	Trp
5630						5635					5640			
Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg
5645						5650					5655			
Ala	Leu	Glu	Ala	Ala	Gly	Val	Thr	Val	Tyr	Val	Glu	Leu	Gly	Pro
5660						5665					5670			
Asp	Gly	Val	Leu	Ser	Ala	Met	Ala	Gln	Glu	Cys	Val	Thr	Gly	Glu
5675						5680					5685			
Gly	Ala	Ala	Phe	Val	Pro	Ala	Leu	Arg	Lys	Gly	Arg	Pro	Glu	Ala
5690						5695					5700			
Glu	Thr	Ile	Thr	Ala	Ala	Leu	Ala	His	Ala	His	Thr	His	Gly	Ile
5705						5710					5715			
Ala	Val	Asp	Trp	Gln	Ala	Tyr	Phe	Ala	Gly	Thr	Gly	Ala	Gln	Arg
5720						5725					5730			
Val	Asp	Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Gln	Arg	Tyr	Trp	Val
5735						5740					5745			
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<212> PRT

<213> Streptomyces aizunensis

<400> 29

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Gln Asp Pro Ile Ala Ile Val Gly Met Gly Cys Arg Tyr Pro Gly Gly  
35 40 45

Val Thr Ser Pro Glu Glu Leu Trp Gln Leu Val Val Asp Gly Gly Asp  
50 55 60

Ala Ile Ser Gly Phe Pro Ala Asp Arg Gly Trp Asp Met Glu Thr Val  
65 70 75 80

Tyr His Pro Asp Pro Glu His Pro Gly Thr Ser Tyr Ala Asn Gln Gly  
85 90 95

Gly Phe Val Arg Asp Phe Ala Arg Phe Asp Pro Ser Leu Phe Gly Ile  
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Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu  
115 120 125

Glu Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Thr Ser  
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Met Arg Gly Lys Gln Val Gly Val Phe Val Gly Thr Ser Asn His Asp  
145 150 155 160

Tyr Leu Ser Ala Leu Leu Ser Ser Ser Glu Asn Val Glu Gly Tyr Leu  
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Gly Thr Gly Asn Ala Ala Ser Val Ala Ser Gly Arg Leu Ser Tyr Thr  
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Phe Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser  
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Ser Ser Val Ala Leu His Leu Ala Val Gln Ala Leu Arg Asn Gly Glu  
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Cys Ser Leu Ala Leu Ala Gly Gly Ala Thr Leu Met Ser Ala Pro Gly  
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Thr Phe Ile Asp Tyr Ser Lys Gln Arg Gly Leu Ala Thr Asp Gly Arg  
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Cys Lys Ala Phe Ser Pro Asp Ala Asp Gly Phe Ser Leu Ala Glu Gly  
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Ala	Gly	Ala	Ala	Leu	Asp	Glu	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu	Phe	625	630	635
Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Val	Glu	Ser	Trp	Gly	Leu	Lys	645	650	655
Pro	Asp	Tyr	Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	660	665	670
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Val	Glu	Ala	Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	Asp	Trp	Val	705	710	715
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Gly	Arg	Arg	Pro	Phe	Ala	Leu	His	Ser	Arg	Ala	Glu	Gly	Leu	Pro
	2585					2590					2595			
Val	Glu	Glu	Pro	Trp	Thr	Arg	His	Ala	Gly	Gly	Val	Leu	Ala	Glu
	2600					2605					2610			
Gly	Gly	Arg	Pro	Pro	Ala	Asp	Phe	Asp	Leu	Thr	Ala	Trp	Pro	Pro
	2615					2620					2625			
Pro	Gly	Ala	Val	Glu	Val	Asp	Leu	Asp	Gly	Arg	Tyr	Asp	Gln	Leu
	2630					2635					2640			
Asp	Gly	Ile	Gly	Phe	Ala	Tyr	Gly	Pro	Thr	Phe	Arg	Gly	Leu	Arg
	2645					2650					2655			
Thr	Ala	Trp	Gln	Leu	Asp	Gly	Glu	Ile	Tyr	Ala	Glu	Val	Arg	Leu
	2660					2665					2670			
Pro	Glu	Gly	Ala	Glu	Gly	Glu	Ala	Gly	Arg	Phe	Gly	Leu	His	Pro
	2675					2680					2685			
Ala	Leu	Leu	Asp	Ala	Ala	Leu	His	Ala	Ile	Gly	Leu	Gly	Gly	Leu
	2690					2695					2700			
Gly	Ala	Asp	Asp	Gly	Gln	Gly	Arg	Leu	Pro	Phe	Ala	Trp	Ser	Gly
	2705					2710					2715			



Val	Ser	Leu	His	Ala	Gly	Gly	Ala	Ala	Ala	Leu	Arg	Val	His	Leu
2720						2725					2730			
Ala	Pro	Ala	Gly	Ala	Glu	Gly	Val	Arg	Leu	Glu	Ile	Ala	Asp	Ala
2735						2740					2745			
Ser	Gly	Ala	Pro	Val	Ala	Ala	Val	Glu	Ser	Leu	Gly	Leu	Arg	Pro
2750						2755					2760			
Val	Thr	Ala	Glu	Gln	Leu	Arg	Ala	Ala	Arg	Ala	Thr	Tyr	His	Glu
2765						2770					2775			
Ser	Val	Phe	Arg	Gln	Gln	Trp	Thr	Glu	Leu	Pro	Gly	Leu	Gly	Ala
2780						2785					2790			
Pro	Ala	Ala	Thr	Pro	Ala	Val	Arg	Tyr	Ala	Phe	Leu	Gly	Gly	Asp
2795						2800					2805			
Ser	Gly	Asp	Ser	Gly	Asp	Ser	Gly	Asp	Thr	Ala	Ala	Ala	Asp	Arg
2810						2815					2820			
His	Gln	Asp	Leu	Ala	Ala	Leu	Ala	Ala	Ala	Ile	Asp	Ala	Gly	Arg
2825						2830					2835			
Pro	Val	Pro	Asp	Glu	Val	Val	Val	Glu	Leu	Ala	Ala	Ala	Pro	Trp
2840						2845					2850			
Ala	Val	Ser	Ala	Ser	Ala	Val	His	Ser	Ala	Ala	His	Asp	Ala	Leu
2855						2860					2865			
Ala	Leu	Ile	Gln	Thr	Trp	Leu	Ala	Asp	Asp	Arg	Phe	Ala	Ala	Ala
2870						2875					2880			
Arg	Leu	Val	Phe	Leu	Thr	Arg	Gly	Ala	Val	Ala	Ala	Asp	Ala	Gly
2885						2890					2895			
Asp	Asp	Val	Thr	Asp	Leu	Ala	Ala	Ala	Thr	Val	Trp	Gly	Leu	Leu
2900						2905					2910			
Arg	Ser	Ala	Gln	Thr	Glu	Asn	Pro	Gly	Arg	Ile	Ala	Leu	Val	Asp
2915						2920					2925			
Thr	Asp	Gly	His	Asp	Arg	Ser	Glu	Gln	Ala	Leu	Arg	Ala	Ala	Leu
2930						2935					2940			
Thr	Ser	Asp	Glu	Glu	Arg	Phe	Ala	Leu	Arg	Ala	Gly	Ala	Val	Leu
2945						2950					2955			
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2960						2965					2970			
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2975						2980					2985			
Ala	Thr	Gly	Ala	Leu	Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Ala	Ala
2990						2995					3000			
Glu	His	Gly	Val	Glu	Arg	Leu	Leu	Leu	Val	Gly	Arg	Arg	Gly	Ala
3005						3010					3015			

Asp	Ala	Pro	Gly	Ala	Ala	Glu	Leu	Val	Ala	Glu	Leu	Ala	Glu	Ser
3020						3025					3030			
Gly	Thr	Leu	Ala	Thr	Trp	Ala	Ala	Cys	Asp	Val	Ala	Asp	Arg	Asp
3035						3040					3045			
Ala	Leu	Ala	Ala	Leu	Leu	Ala	Asp	Ile	Pro	Ala	Glu	His	Pro	Leu
3050						3055					3060			
Thr	Ala	Val	Val	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Val	Ile
3065						3070					3075			
Ser	Ser	Leu	Thr	Pro	Glu	Arg	Leu	Ser	Ala	Val	Leu	Arg	Pro	Lys
3080						3085					3090			
Val	Asp	Ala	Ala	Trp	Asn	Leu	His	Glu	Leu	Thr	Arg	Gly	Leu	Asp
3095						3100					3105			
Leu	Ala	Ala	Phe	Val	Leu	Phe	Ser	Ser	Thr	Ser	Gly	Leu	Phe	Gly
3110						3115					3120			
Gly	Pro	Gly	Gln	Gly	Asn	Tyr	Ala	Ala	Ala	Asn	Ser	Phe	Leu	Asp
3125						3130					3135			
Ala	Leu	Ala	Gln	His	Arg	Arg	Ala	His	Gly	Leu	Pro	Ala	Thr	Ser
3140						3145					3150			
Thr	Ala	Trp	Gly	Leu	Trp	Ser	Val	Ala	Asp	Gly	Met	Ala	Gly	Ala
3155						3160					3165			
Leu	Asp	Ala	Ala	Asp	Val	Asn	Arg	Met	Arg	Arg	Ala	Gly	Leu	Pro
3170						3175					3180			
Pro	Leu	Thr	Ala	Ala	Asp	Gly	Leu	Gly	Leu	Phe	Asp	Thr	Ala	Val
3185						3190					3195			
Ser	Leu	Asp	Glu	Ala	Ser	Leu	Ala	Leu	Met	Arg	Val	Asp	Thr	Glu
3200						3205					3210			
Val	Leu	Arg	Thr	Gln	Ala	Gly	Ala	Gly	Thr	Ile	Ala	Pro	Leu	Leu
3215						3220					3225			
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3230						3235					3240			
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3245						3250					3255			
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3260						3265					3270			
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3275						3280					3285			
Val	Glu	Ser	Gly	Arg	Ala	Phe	Lys	Glu	Leu	Gly	Phe	Asp	Ser	Leu
3290						3295					3300			
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3305						3310					3315			

Arg	Leu	Pro	Ala	Thr	Leu	Ile	Phe	Asp	Tyr	Pro	Asp	Pro	Thr	Val
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Leu	Ala	Arg	Tyr	Leu	Arg	Gly	Glu	Leu	Ile	Gly	Asp	Asp	Thr	Thr
3335						3340					3345			
Asp	Ala	Val	Ala	Glu	Pro	Leu	Thr	Ala	Val	Ala	Asp	Asp	Glu	Pro
3350						3355					3360			
Ile	Ala	Ile	Val	Ala	Met	Ser	Cys	Arg	Tyr	Pro	Gly	Asp	Val	Arg
3365						3370					3375			
Thr	Pro	Glu	Asp	Leu	Trp	Gln	Leu	Leu	Thr	Ala	Gly	Ala	Asp	Gly
3380						3385					3390			
Ile	Thr	Arg	Leu	Pro	Glu	Asn	Arg	Gly	Trp	Asp	Thr	Glu	Gly	Leu
3395						3400					3405			
Tyr	Asp	Pro	Asp	Pro	Glu	Ser	Gln	Gly	Thr	Ser	Tyr	Ala	Arg	Asp
3410						3415					3420			
Gly	Gly	Phe	Leu	His	Asp	Ala	Ala	Glu	Phe	Asp	Ala	Ser	Phe	Phe
3425						3430					3435			
Gly	Ile	Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg
3440						3445					3450			
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3455						3460					3465			
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3470						3475					3480			
Val	Met	Tyr	His	Asp	Tyr	Gly	Ala	Arg	Leu	His	Ala	Val	Pro	Asp
3485						3490					3495			
Gly	Val	Glu	Gly	Tyr	Leu	Gly	Thr	Gly	Ser	Ser	Ser	Ser	Ile	Val
3500						3505					3510			
Ser	Gly	Arg	Val	Ala	Tyr	Thr	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Val
3515						3520					3525			
Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Leu
3530						3535					3540			
Ala	Ala	Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Ser	Leu	Ala	Leu	Ala
3545						3550					3555			
Gly	Gly	Val	Thr	Val	Met	Phe	Thr	Pro	Gly	Thr	Phe	Ile	Glu	Phe
3560						3565					3570			
Ser	Arg	Gln	Arg	Gly	Leu	Ala	Ala	Asp	Gly	Arg	Cys	Lys	Ser	Phe
3575						3580					3585			
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3590						3595					3600			
Leu	Leu	Leu	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Gln
3605						3610					3615			

Val	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Val	Asn	Gln	Asp	Gly	Ala
3620						3625					3630			
Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val
3635						3640					3645			
Ile	Arg	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Val	Ala	Ala	Gly	His	Val
3650						3655					3660			
Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro
3665						3670					3675			
Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Glu	His	Thr
3680						3685					3690			
Asp	Asp	Arg	Pro	Leu	Leu	Leu	Gly	Ser	Val	Lys	Ser	Asn	Leu	Gly
3695						3700					3705			
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3710						3715					3720			
Met	Ser	Met	Arg	His	Gly	Val	Leu	Pro	Lys	Thr	Leu	His	Val	Asp
3725						3730					3735			
Glu	Pro	Thr	Pro	His	Val	Asp	Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu
3740						3745					3750			
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3755						3760					3765			
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3770						3775					3780			
Ile	Ile	Glu	Gln	Ala	Pro	Glu	Pro	Asp	Pro	Ala	Arg	Ala	Lys	Ala
3785						3790					3795			
Thr	Ala	Arg	Pro	Ala	Pro	Asp	Ala	Ala	Ala	Pro	Ser	Ser	Val	Pro
3800						3805					3810			
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3815						3820					3825			
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3830						3835					3840			
Val	Asp	Leu	Gly	Leu	Ser	Leu	Ala	Thr	Thr	Arg	Ser	Ala	Leu	Glu
3845						3850					3855			
Gln	Arg	Ala	Ala	Leu	Val	Ala	Gly	Asp	Arg	Ala	Glu	Leu	Leu	Arg
3860						3865					3870			
Gly	Leu	Asp	Ala	Leu	Ala	Arg	Gly	Glu	Asp	Thr	Ala	Gly	Leu	Val
3875						3880					3885			
Arg	Gly	Thr	Ala	Arg	Glu	Gly	Gln	Val	Ala	Phe	Leu	Phe	Thr	Gly
3890						3895					3900			
Gln	Gly	Ser	Gln	Arg	Pro	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Asp	Ala
3905						3910					3915			

His	Pro	Val	Phe	Ala	Asp	Ala	Leu	Asp	Glu	Ile	Cys	Gly	Glu	Leu
3920						3925					3930			
Asp	Arg	His	Leu	Glu	Val	Pro	Leu	Lys	Gly	Val	Leu	Phe	Ala	Thr
3935						3940					3945			
Glu	Gly	Asp	Leu	Ile	His	Gln	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu
3950						3955					3960			
Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Leu	Glu	Ser	Arg	Gly
3965						3970					3975			
Val	Gln	Pro	Asp	Phe	Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala
3980						3985					3990			
Ala	Ala	His	Val	Ala	Gly	Val	Phe	Ser	Leu	Gln	Asp	Ala	Ser	Glu
3995						4000					4005			
Leu	Val	Ala	Ala	Arg	Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro	Thr	Gly
4010						4015					4020			
Gly	Val	Met	Ile	Ala	Val	Gln	Ala	Ser	Glu	Asp	Glu	Val	Leu	Pro
4025						4030					4035			
Leu	Leu	Thr	Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln
4040						4045					4050			
Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Ala
4055						4060					4065			
Glu	Ser	Phe	Thr	Asp	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His
4070						4075					4080			
Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met	Leu	Ala	Asp	Phe	Arg
4085						4090					4095			
Lys	Val	Ala	Glu	Gly	Leu	Val	Tyr	Glu	Asn	Pro	Arg	Ile	Pro	Val
4100						4105					4110			
Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Thr	Asp	Glu	Met	Gly	Ser
4115						4120					4125			
Ala	Asp	Phe	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu
4130						4135					4140			
Asp	Gly	Ile	Arg	Ala	Leu	Glu	Ala	Ala	Gly	Val	Thr	Thr	His	Ile
4145						4150					4155			
Glu	Leu	Gly	Pro	Asp	Gly	Val	Leu	Cys	Ala	Met	Ala	Gln	Glu	Cys
4160						4165					4170			
Val	Ser	Gly	Glu	Asp	Thr	Val	Phe	Val	Pro	Val	Leu	Arg	Pro	Gly
4175						4180					4185			
Arg	Pro	Glu	Ala	Glu	Thr	Val	Thr	Thr	Ala	Leu	Ala	Arg	Val	His
4190						4195					4200			
Val	Gln	Gly	Val	Pro	Val	Asp	Trp	Gln	Ala	Tyr	Phe	Ser	Gly	Thr
4205						4210					4215			

Gly	Ala	Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Lys
4220						4225					4230			
Arg	Tyr	Trp	Leu	Asp	Val	Gly	Val	Ser	Val	Glu	Asp	Val	Leu	Ala
4235						4240					4245			
Ala	Gly	Leu	Asp	Ala	Ala	Asp	His	Pro	Leu	Leu	Gly	Ala	Thr	Val
4250						4255					4260			
Ser	Leu	Pro	Gly	Ser	Asp	Gly	Leu	Val	Leu	Thr	Gly	Arg	Leu	Ala
4265						4270					4275			
Leu	Ser	Thr	His	Pro	Trp	Leu	Ser	Asp	His	Thr	Val	Met	Asp	Thr
4280						4285					4290			
Val	Leu	Leu	Pro	Gly	Thr	Ala	Phe	Val	Glu	Leu	Ala	Leu	Arg	Ala
4295						4300					4305			
Gly	Glu	Leu	Val	Gly	Cys	Gly	Ala	Val	Glu	Glu	Leu	Ala	Leu	Glu
4310						4315					4320			
Ala	Pro	Leu	Thr	Leu	Ala	Asp	Gln	Gly	Ala	Val	Gln	Phe	Gln	Leu
4325						4330					4335			
Ala	Val	Asp	Ala	Pro	Asp	Gly	Ala	Gly	Arg	Arg	Thr	Leu	Thr	Leu
4340						4345					4350			
His	Ser	Arg	Arg	Ala	Gly	Ala	Pro	Ala	Glu	Glu	Pro	Trp	Thr	Arg
4355						4360					4365			
His	Ala	Thr	Gly	Val	Leu	Thr	Pro	Glu	Ala	Ser	Ala	Val	Pro	Ala
4370						4375					4380			
His	Pro	Phe	Asp	Leu	Thr	Ala	Trp	Pro	Pro	Ala	Asp	Ala	Glu	Pro
4385						4390					4395			
Val	Pro	Thr	Asp	Ala	Phe	Tyr	Pro	Gly	Ala	Ala	Ala	Ala	Gly	Leu
4400						4405					4410			
Gly	Tyr	Gly	Pro	Val	Phe	Gln	Gly	Leu	Arg	Ala	Ala	Trp	Arg	Arg
4415						4420					4425			
Gly	Asp	Glu	Leu	Phe	Ala	Glu	Val	Ala	Leu	Asp	Glu	Glu	His	Glu
4430						4435					4440			
Ala	Asp	Ala	Ala	Ala	Tyr	Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ala
4445						4450					4455			
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4460						4465					4470			
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4475						4480					4485			
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4490						4495					4500			
Ala	Ala	Ala	Ser	Gly	Gly	Ile	Ala	Leu	Asp	Val	Ala	Asp	Ser	Thr
4505						4510					4515			

Gly	Ala	Pro	Val	Ala	Ser	Val	Glu	Ser	Leu	Ile	Leu	Arg	Pro	Val
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Ser	Ala	Glu	Gln	Leu	Gly	Gly	Asp	Arg	Thr	Ala	His	His	Glu	Ser
4535						4540					4545			
Leu	Phe	Gly	Val	Glu	Trp	Thr	Arg	Leu	Ser	Leu	Pro	Thr	Gly	Ala
4550						4555					4560			
Ile	Pro	Ser	Gly	Glu	Arg	Trp	Ala	Val	Leu	Gly	Glu	Asp	Glu	Pro
4565						4570					4575			
Asp	Leu	Arg	Val	Gly	Gly	Glu	Arg	Leu	Asp	Val	Tyr	Ser	Gly	Leu
4580						4585					4590			
Thr	Ala	Leu	Arg	Glu	Glu	Ile	Ala	Ala	Gly	Thr	Ser	Ala	Pro	Asp
4595						4600					4605			
Val	Val	Val	Val	Pro	Leu	Ser	Ser	Ala	Ala	Ser	Gly	Gly	Gly	Arg
4610						4615					4620			
Ala	Gly	Thr	Ala	Arg	Ala	Ala	Ala	His	His	Ala	Leu	Ala	Leu	Val
4625						4630					4635			
Lys	Glu	Trp	Leu	Ala	Asp	Glu	Arg	Leu	Asp	Gly	Ala	Arg	Leu	Val
4640						4645					4650			
Leu	Leu	Thr	Arg	Gly	Ala	Val	Ala	Ala	Val	Pro	Asp	Glu	His	Val
4655						4660					4665			
Thr	Asp	Leu	Thr	His	Ala	Pro	Val	Trp	Gly	Leu	Val	Arg	Ser	Ala
4670						4675					4680			
Gln	Ser	Glu	Asn	Pro	Gly	Arg	Phe	Val	Leu	Ala	Asp	Thr	Asp	Gly
4685						4690					4695			
Ala	Asp	Ala	Ser	Phe	Gly	Ala	Leu	Ala	Ala	Ala	Leu	Ala	Thr	Asp
4700						4705					4710			
Glu	Pro	Gln	Leu	Ala	Leu	Arg	Ser	Gly	Glu	Ala	His	Ala	Phe	Arg
4715						4720					4725			
Leu	Arg	Arg	Ile	Ala	Arg	Thr	Ala	Ser	Asp	Pro	Ala	Gly	Glu	Thr
4730						4735					4740			
Gly	Thr	Gly	Asp	Gly	Pro	Thr	Arg	Ala	Asp	Asp	Ala	Gly	Arg	Ile
4745						4750					4755			
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4760						4765					4770			
Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Ala	Thr	Thr	His	Gly	Ala	Arg
4775						4780					4785			
His	Leu	Leu	Leu	Leu	Ser	Arg	Arg	Gly	Asp	Arg	Ala	Pro	Gly	Ala
4790						4795					4800			
Gly	Glu	Leu	Thr	Arg	Glu	Leu	Thr	Glu	Ala	Gly	Val	Asp	Val	Thr
4805						4810					4815			

Trp	Ala	Ala	Cys	Asp	Ala	Ala	Asp	Arg	Asp	Ala	Leu	Ala	Ala	Val
4820						4825					4830			
Leu	Ala	Ala	Ile	Pro	Ala	Asp	Arg	Pro	Leu	Thr	Ala	Val	Val	His
4835						4840					4845			
Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Ile	Ile	Asp	Ser	Leu	Thr	Pro
4850						4855					4860			
Glu	Arg	Leu	Asp	Thr	Val	Leu	Arg	Pro	Lys	Val	Asp	Ala	Ala	Trp
4865						4870					4875			
Asn	Leu	His	Glu	Leu	Thr	Glu	Gly	His	Glu	Leu	Ser	Ala	Phe	Val
4880						4885					4890			
Leu	Phe	Ser	Ser	Val	Ala	Gly	Cys	Phe	Gly	Ala	Ala	Gly	Gln	Gly
4895						4900					4905			
Asn	Tyr	Ala	Ala	Ala	Asn	Thr	Phe	Leu	Asp	Ala	Leu	Ala	Gln	His
4910						4915					4920			
Arg	Lys	Ala	Arg	Gly	Leu	Thr	Ala	Ser	Ser	Leu	Ala	Trp	Gly	Leu
4925						4930					4935			
Trp	Glu	Thr	Thr	Asp	Gly	Met	Ala	Gly	Ala	Leu	Asp	Glu	Ala	Asp
4940						4945					4950			
Leu	Thr	Arg	Met	Ala	Arg	Ser	Gly	Val	Ala	Ala	Leu	Ala	Pro	Asp
4955						4960					4965			
Glu	Gly	Leu	Ala	Leu	Phe	Asp	Thr	Ser	Arg	Thr	Leu	Asp	Asp	Ala
4970						4975					4980			
Val	Leu	Val	Pro	Met	Arg	Ile	Glu	Leu	Gly	Ala	Leu	Arg	Ala	Gln
4985						4990					4995			
Ala	Ala	Asp	Gly	Thr	Leu	Pro	Pro	Leu	Leu	Arg	Gly	Leu	Val	Arg
5000						5005					5010			
Thr	Pro	Ala	Arg	Arg	Ala	Ala	Gly	Ser	Thr	Ala	Arg	Ala	Gly	Thr
5015						5020					5025			
Arg	Pro	Gly	Thr	Asp	Pro	Ala	Gly	Thr	Leu	Glu	Glu	Arg	Leu	Ala
5030						5035					5040			
Gly	Leu	Ser	Ala	Ala	Glu	Arg	Asp	Arg	Ala	Leu	Met	Glu	Leu	Val
5045						5050					5055			
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5060						5065					5070			
Val	Asp	Ala	Ala	Arg	Gly	Phe	Leu	Asp	Leu	Gly	Phe	Asp	Ser	Leu
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 <212> PRT  
 <213> Streptomyces aizunensis

<400> 31

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Gln	Glu	Pro	Ile	Ala	Val	Val	Ala	Met	Ser	Cys	Arg	Tyr	Pro	Gly	Gly	35	40	45	
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Ala	Val	Ser	Ala	Tyr	Pro	Thr	Asp	Arg	Gly	Trp	Asp	Ala	Glu	Val	Leu	65	70	75	80
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Tyr	Ala	Ala	Arg	Leu	Phe	Ser	Val	Pro	Glu	Glu	Ile	Glu	Gly	Phe	Leu	165	170	175	
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Arg	Arg	Leu	Leu	Gly	Leu	Asp	Ala	Pro	Glu	Arg	Glu	Arg	Leu	Leu	
1715						1720					1725				
Leu	Asp	Leu	Val	Arg	Gly	His	Val	Ala	Asp	Val	Leu	Gly	His	Gly	
1730						1735					1740				
Ser	Pro	Asp	Ala	Ile	Asp	Pro	Glu	Gln	Ala	Phe	Ser	Glu	Leu	Gly	
1745						1750					1755				
Phe	Asp	Ser	Leu	Thr	Ala	Val	Glu	Leu	Arg	Asn	Arg	Leu	Gly	Ala	
1760						1765					1770				
Ala	Ile	Gly	Arg	Arg	Leu	Pro	Ala	Thr	Leu	Ile	Phe	Asp	His	Pro	
1775						1780					1785				

Ala	Ser	Leu	Thr	Leu	Ala	Arg	His	Leu	Ser	Gly	Glu	Leu	Ala	Gly
1790						1795					1800			
Ser	Gln	Ala	Ala	Leu	Ala	Pro	Ala	Gly	Pro	Ala	Pro	Thr	Val	Thr
1805						1810					1815			
Asp	Asp	Asp	Pro	Ile	Ala	Ile	Val	Ala	Met	Ser	Cys	Arg	Tyr	Pro
1820						1825					1830			
Gly	Gly	Val	Thr	Thr	Pro	Glu	Glu	Leu	Trp	Gln	Leu	Leu	Ala	Gly
1835						1840					1845			
Gly	Gly	Asp	Ala	Ile	Ser	Gly	Phe	Pro	Ala	Asp	Arg	Gly	Trp	Asp
1850						1855					1860			
Val	Glu	Ser	Leu	Tyr	Asp	Pro	Asp	Pro	Asp	His	Pro	Gly	Thr	Ser
1865						1870					1875			
Tyr	Thr	Arg	His	Gly	Gly	Phe	Leu	Arg	Asp	Ala	Ala	Ala	Phe	Asp
1880						1885					1890			
Pro	Thr	Phe	Phe	Gly	Ile	Ser	Pro	Arg	Glu	Ala	Val	Gly	Thr	Asp
1895						1900					1905			
Pro	Gln	Gln	Arg	Leu	Leu	Leu	Glu	Thr	Thr	Trp	Glu	Ala	Phe	Glu
1910						1915					1920			
Arg	Ala	Gly	Ile	Asp	Pro	Ala	Thr	Val	Arg	Gly	Ser	Arg	Thr	Gly
1925						1930					1935			
Val	Phe	Ala	Gly	Val	Met	Tyr	His	Asp	Tyr	Ala	Ala	Leu	Leu	Glu
1940						1945					1950			
Arg	Ser	Lys	Asp	Gly	Ala	Asp	Gly	Ser	Leu	Gly	Ser	Gly	Ser	Thr
1955						1960					1965			
Gly	Ser	Ile	Ala	Ser	Gly	Arg	Val	Ser	Tyr	Thr	Phe	Gly	Leu	Glu
1970						1975					1980			
Gly	Pro	Ala	Val	Thr	Ile	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val
1985						1990					1995			
Ala	Leu	His	Met	Ala	Ile	Gln	Ala	Leu	Arg	Thr	Gly	Glu	Cys	Asp
2000						2005					2010			
Met	Ala	Leu	Ala	Gly	Gly	Val	Thr	Val	Met	Ala	Thr	Pro	Gly	Thr
2015						2020					2025			
Phe	Ile	Gly	Phe	Ser	Arg	Gln	Arg	Gly	Leu	Ser	Ala	Asp	Gly	Arg
2030						2035					2040			
Cys	Arg	Ala	Phe	Ser	Ala	Asp	Ala	Asp	Gly	Thr	Gly	Trp	Gly	Glu
2045						2050					2055			
Gly	Val	Gly	Met	Leu	Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg
2060						2065					2070			
Asn	Gly	His	Pro	Val	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Ile	Asn
2075						2080					2085			



Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser 2090 2095 2100
Gln Gln Arg Val Ile Arg Ala Ala Leu Ala Ser Ala Gly Leu Ser 2105 2110 2115
Ala Ala Glu Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Thr 2120 2125 2130
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly 2135 2140 2145
Arg Glu His Thr Glu Asp Ser Pro Leu Trp Leu Gly Ser Ile Lys 2150 2155 2160
Ser Asn Met Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly Val 2165 2170 2175
Ile Lys Met Val Leu Ala Ile Gln His Gly Val Leu Pro Arg Thr 2180 2185 2190
Leu His Ala Asp Arg Pro Ser Pro His Val Asp Trp Ser Gln Gly 2195 2200 2205
Ala Val Ser Leu Leu Thr Glu Ser Val Pro Trp Pro Glu Thr Gly 2210 2215 2220
Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr 2225 2230 2235
Asn Ala His Thr Ile Ile Glu Gln Ala Pro Glu Glu Ala Thr Val 2240 2245 2250
Ala Pro Ala Asp Ala Val Ala Ala Pro Ser Ala Leu Pro Leu Gln 2255 2260 2265
Leu Ala Gly Arg Ser Ala Glu Ala Leu Ser Ala Gln Ala Arg Ala 2270 2275 2280
Leu Ser Ala His Leu Thr Ala His Pro Asp Val Pro Leu Ala Asp 2285 2290 2295
Leu Ala Tyr Ser Leu Ala Thr Ser Arg Ala Thr Phe Asp His Arg 2300 2305 2310
Ala Val Leu Val Ala Thr Glu Gly Thr Thr Ala Ala Thr Ala Val 2315 2320 2325
Thr Ala Leu Asp Ala Leu Ala Asp Arg Arg Thr Ala Pro Gly Leu 2330 2335 2340
Val Arg Gly Thr Ala Ser Lys Gly Gly Arg Thr Ala Phe Leu Phe 2345 2350 2355
Thr Gly Gln Gly Ser Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr 2360 2365 2370
Glu Ala His Pro Val Phe Ala Arg Ala Leu Asp Ala Val Cys Asp 2375 2380 2385

Arg	Leu	Glu	Leu	Pro	Leu	Lys	Asp	Val	Leu	Phe	Gly	Thr	Asp	Ala
2390						2395					2400			
Gly	Leu	Leu	Asn	Glu	Thr	Val	Tyr	Thr	Gln	Pro	Gly	Leu	Phe	Ala
2405						2410					2415			
Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Leu	Glu	Ser	Trp	Gly	Val	Lys
2420						2425					2430			
Pro	Asp	Phe	Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala
2435						2440					2445			
His	Val	Ala	Gly	Val	Leu	Ser	Leu	Asp	Asp	Val	Cys	Ala	Leu	Val
2450						2455					2460			
Glu	Ala	Arg	Gly	Arg	Leu	Met	Gly	Ala	Leu	Pro	Gly	Gly	Gly	Val
2465						2470					2475			
Met	Ile	Ala	Val	Gln	Ala	Ser	Glu	Ala	Glu	Val	Leu	Pro	Leu	Leu
2480						2485					2490			
Thr	Asp	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Arg	Ser	Val
2495						2500					2505			
Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Val	Glu	Ser
2510						2515					2520			
Phe	Thr	Asp	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe
2525						2530					2535			
His	Ser	Pro	His	Met	Asp	Gly	Met	Leu	Asp	Ala	Phe	Arg	Glu	Ile
2540						2545					2550			
Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Val	Val	Ser
2555						2560					2565			
Asn	Leu	Thr	Gly	Ala	Leu	Val	Ser	Asp	Glu	Met	Gly	Ser	Ala	Asp
2570						2575					2580			
Phe	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly
2585						2590					2595			
Ile	His	Ala	Leu	Glu	Ala	Ala	Gly	Val	Thr	Thr	Tyr	Val	Glu	Leu
2600						2605					2610			
Gly	Pro	Asp	Gly	Val	Leu	Ser	Ala	Met	Ala	Gln	Glu	Cys	Val	Thr
2615						2620					2625			
Gly	Glu	Asp	Ser	Val	Phe	Val	Pro	Val	Leu	Arg	Ser	Gly	Arg	Pro
2630						2635					2640			
Glu	Ala	Glu	Ser	Val	Thr	Thr	Ala	Leu	Ala	Gln	Ala	His	Val	Arg
2645						2650					2655			
Gly	Ile	Ala	Val	Asp	Trp	Gln	Ala	Tyr	Phe	Ala	Gly	Thr	Ser	Ala
2660						2665					2670			
Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Arg	Phe	Gln	Arg	Glu	His	Tyr
2675						2680					2685			

Trp	Pro	Glu	Thr	Gly	Ile	Pro	Leu	Pro	Gly	Asp	Thr	Ala	Gly	Leu
2690						2695					2700			
Gly	Leu	Ala	Ala	Ala	Gly	His	Pro	Leu	Leu	Gly	Ala	Ala	Val	Thr
2705						2710					2715			
Leu	Ala	Asp	Ala	Asp	Gly	Cys	Val	Leu	Thr	Gly	Arg	Leu	Ser	Leu
2720						2725					2730			
Arg	Thr	His	Pro	Trp	Leu	Ala	Asp	His	Ala	Val	Met	Gly	Ser	Val
2735						2740					2745			
Leu	Leu	Pro	Gly	Thr	Ala	Leu	Val	Glu	Leu	Ala	Leu	His	Ala	Gly
2750						2755					2760			
Glu	Arg	Val	Gly	Thr	Arg	Ala	Leu	Asp	Glu	Leu	Thr	Leu	Gln	Ala
2765						2770					2775			
Pro	Leu	Ile	Leu	Pro	Asn	Glu	Gly	Ala	Val	Gln	Leu	Gln	Val	Val
2780						2785					2790			
Val	Gly	Ala	Pro	Asp	Ala	Ala	Gly	His	Arg	Thr	Val	Ala	Val	Tyr
2795						2800					2805			
Ser	Arg	Pro	Asp	Ala	Asp	Gly	Glu	Ala	Trp	Val	Arg	His	Ala	Asp
2810						2815					2820			
Gly	Leu	Leu	Val	Asp	Glu	Val	Arg	Gly	Ala	Ala	Ala	Asp	Leu	Gly
2825						2830					2835			
Val	Trp	Pro	Pro	Ala	Gly	Ala	Thr	Ala	Val	Pro	Val	Asp	Asp	Ala
2840						2845					2850			
Tyr	Ala	Ile	Leu	Glu	Thr	Ser	Gly	Leu	Ala	Tyr	Gly	Pro	Leu	Phe
2855						2860					2865			
Gln	Gly	Leu	Arg	Ala	Ala	Trp	Arg	Arg	Ala	Gly	Glu	Leu	Phe	Ala
2870						2875					2880			
Glu	Leu	Ala	Leu	Pro	Thr	Glu	Ala	Gln	Ala	Asp	Ala	Ala	Ala	Phe
2885						2890					2895			
Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ser	Ala	Leu	His	Thr	Leu	Ala
2900						2905					2910			
Leu	Gly	Asp	Leu	Leu	Ser	Gly	Ala	Asp	Ala	Glu	Glu	Thr	Pro	Gly
2915						2920					2925			
Ala	Ala	Arg	Leu	Pro	Phe	Ala	Trp	Arg	Gly	Val	Arg	Leu	His	Ala
2930						2935					2940			
Ala	Gly	Ala	Pro	Ala	Val	Arg	Val	Arg	Leu	Ala	Glu	Ala	Gly	Gln
2945						2950					2955			
Gly	Ala	Val	Ser	Leu	Glu	Leu	Ala	Asp	Ser	Ala	Gly	Ala	Pro	Val
2960						2965					2970			
Ala	Ser	Val	Asp	Ser	Leu	Val	Leu	Arg	Ala	Met	Ser	Pro	Glu	Gln
2975						2980					2985			

Leu	Gly	Ala	Ala	Ser	Ala	Gly	Arg	Gln	Glu	Ser	Leu	Phe	Gln	Ile
2990						2995					3000			
Asp	Trp	Val	Glu	Pro	Ala	Ala	Asp	Arg	Thr	Ala	Ala	Ala	Thr	Asp
3005						3010					3015			
Val	Glu	Arg	Ala	Leu	Val	Gly	Pro	Glu	Leu	Arg	Gly	Leu	Asp	Ala
3020						3025					3030			
Thr	Pro	Tyr	Ala	Asp	Leu	Ala	Ala	Leu	Ala	Ala	Ala	Asp	Ser	Asp
3035						3040					3045			
Val	Pro	Glu	Leu	Val	Phe	Ile	Thr	Thr	Arg	Ala	Glu	Ser	Glu	Pro
3050						3055					3060			
Glu	Gly	Leu	Pro	Gly	Thr	Val	His	Val	Arg	Ala	Val	Asp	Ala	Leu
3065						3070					3075			
Thr	His	Val	Arg	Ala	Trp	Leu	Ala	Glu	Glu	Arg	Phe	Ala	Ser	Ala
3080						3085					3090			
Arg	Leu	Val	Phe	Val	Thr	Arg	Gly	Ala	Met	Thr	Val	Gly	Ser	Asp
3095						3100					3105			
Glu	Ala	Val	Arg	Asp	Leu	Ala	Gly	Ala	Ala	Val	Trp	Gly	Leu	Val
3110						3115					3120			
Arg	Ser	Ala	Gly	Thr	Glu	His	Pro	Gly	Arg	Phe	Ala	Leu	Val	Asp
3125						3130					3135			
Leu	Asp	Asp	Asp	Asp	Val	Leu	Pro	Glu	Gln	Thr	Val	Leu	Thr	Ala
3140						3145					3150			
Leu	Ala	Ala	Gly	Glu	Ser	Glu	Leu	Val	Val	Arg	Glu	Gly	Ser	Leu
3155						3160					3165			
Leu	Val	Pro	Arg	Leu	Ala	Arg	Ala	Ala	Val	Val	Glu	Gly	Ser	Gly
3170						3175					3180			
Arg	Glu	Leu	Asp	Val	Asp	Gly	Thr	Val	Leu	Val	Thr	Gly	Ala	Ser
3185						3190					3195			
Gly	Thr	Leu	Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Val	Val	Glu	Arg
3200						3205					3210			
Gly	Val	Arg	Arg	Leu	Leu	Leu	Val	Ser	Arg	Arg	Gly	Gly	Ala	Ala
3215						3220					3225			
Glu	Gly	Ala	Ala	Glu	Leu	Gly	Ala	Glu	Leu	Thr	Glu	Leu	Gly	Ala
3230						3235					3240			
Asp	Val	Arg	Trp	Ala	Ala	Cys	Asp	Val	Ala	Asp	Arg	Glu	Ala	Leu
3245						3250					3255			
Glu	Ser	Val	Leu	Ala	Gly	Ile	Pro	Ala	Glu	Tyr	Pro	Leu	Ser	Gly
3260						3265					3270			
Val	Val	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Val	Val	Ser	Ser
3275						3280					3285			

Leu Thr	Ala Glu Arg Val	Ser	Ala Val Leu Arg	Pro	Lys Val Asp
3290		3295		3300	
Ala Ala	Trp Asn Leu His	Glu	Leu Thr Arg Gly	Leu	Asp Leu Ser
3305		3310		3315	
Leu Phe	Val Leu Phe Ser	Ser	Ala Ala Gly Val	Phe	Gly Gly Ala
3320		3325		3330	
Gly Gln	Ala Asn Tyr Ala	Ala	Ala Asn Val Phe	Leu	Asp Ala Leu
3335		3340		3345	
Ala Gln	His Arg Arg Ala	Gln	Gly Leu Ala Ala	Thr	Ser Leu Ala
3350		3355		3360	
Trp Gly	Leu Trp Ala Glu	Pro	Gly Gly Met Ala	Gly	Ala Leu Asp
3365		3370		3375	
Ala Asp	Asp Val Ser Arg	Leu	Gly Arg Gly Gly	Val	Ser Gly Leu
3380		3385		3390	
Ser Ala	Gly Glu Gly Val	Ala	Leu Phe Asp Ala	Ala	Ser Ala Ser
3395		3400		3405	
Glu Gln	Ala Leu Phe Val	Pro	Val Lys Leu Asp	Leu	Ala Ala Leu
3410		3415		3420	
Arg Ala	Gln Ala Gly Ser	Gly	Met Leu Pro Pro	Leu	Leu Ser Gly
3425		3430		3435	
Leu Val	Arg Thr Pro Thr	Arg	Arg Ala Ala Gly	Thr	Ala Asn Ala
3440		3445		3450	
Ala Val	Ser Ala Pro Gly	Asp	Arg Leu Ala Gly	Leu	Ser Ala Ala
3455		3460		3465	
Glu Gln	Val Ala His Val	Leu	Glu Leu Val Arg	Thr	Gln Val Ala
3470		3475		3480	
Ala Val	Leu Gly Tyr Ala	Ser	Pro Glu Ala Val	Glu	Lys Asp Ser
3485		3490		3495	
Ser Phe	Arg Glu Leu Gly	Phe	Asp Ser Leu Thr	Ala	Val Glu Leu
3500		3505		3510	
Arg Asn	Leu Leu Gly Ala	Ala	Thr Gly Leu Arg	Leu	Pro Ala Thr
3515		3520		3525	
Leu Val	Phe Asp Tyr Pro	Thr	Ser Ala Val Leu	Ala	Asp His Leu
3530		3535		3540	
Arg Ser	Glu Leu Val Gly	Thr	Ala Pro Val Thr	Ser	Ala Pro Val
3545		3550		3555	
Val Leu	Ala Ala Arg Asp	Asp	Asp Glu Pro Ile	Ala	Ile Val Gly
3560		3565		3570	
Leu Gly	Cys Arg Tyr Pro	Gly	Gly Val Glu Ser	Pro	Asp Asp Leu
3575		3580		3585	

Trp	Arg	Leu	Val	Leu	Glu	Gly	Arg	Asp	Ala	Ile	Thr	Glu	Phe	Pro
3590						3595					3600			
Glu	Asp	Arg	Gly	Trp	Asp	Val	Asp	Ala	Leu	Phe	Asp	Ala	Asp	Pro
3605						3610					3615			
Asp	Gln	Gln	Gly	Thr	Ser	Tyr	Ala	Arg	Glu	Gly	Gly	Phe	Val	Arg
3620						3625					3630			
Asp	Ala	Gly	His	Phe	Asp	Pro	Ala	Phe	Phe	Gly	Ile	Ser	Pro	Arg
3635						3640					3645			
Glu	Ala	Val	Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu	Leu	Leu	Glu	Thr
3650						3655					3660			
Ser	Trp	Glu	Ala	Phe	Glu	Arg	Ala	Gly	Ile	Asp	Pro	Ala	Ala	Leu
3665						3670					3675			
Arg	Gly	Ser	Arg	Thr	Gly	Val	Phe	Ala	Gly	Val	Met	Tyr	His	Asp
3680						3685					3690			
Tyr	Ala	Ser	Arg	Leu	Thr	Ala	Leu	Pro	Glu	Gly	Val	Glu	Gly	Phe
3695						3700					3705			
Leu	Gly	Thr	Gly	Asn	Ala	Ala	Ser	Val	Ile	Ser	Gly	Arg	Leu	Ser
3710						3715					3720			
Tyr	Ala	Phe	Gly	Leu	Glu	Gly	Pro	Ala	Ile	Thr	Val	Asp	Thr	Ala
3725						3730					3735			
Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Leu	Ala	Val	Gln	Ala	Leu
3740						3745					3750			
Arg	Asn	Gly	Glu	Cys	Ser	Leu	Ala	Leu	Ala	Gly	Gly	Val	Thr	Val
3755						3760					3765			
Met	Ala	Thr	Pro	Ala	Ala	Phe	Val	Glu	Phe	Ser	Arg	Gln	Arg	Gly
3770						3775					3780			
Leu	Ala	Ala	Asp	Gly	Arg	Cys	Lys	Ala	Phe	Ser	Ala	Gly	Ala	Asp
3785						3790					3795			
Gly	Thr	Gly	Trp	Ser	Glu	Gly	Ala	Gly	Val	Leu	Leu	Val	Glu	Arg
3800						3805					3810			
Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Pro	Val	Leu	Ala	Val	Val
3815						3820					3825			
Arg	Gly	Ser	Ala	Ile	Asn	Gln	Asp	Gly	Ala	Ser	Asn	Gly	Leu	Thr
3830						3835					3840			
Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	Arg	Gln	Ala	Leu
3845						3850					3855			
Ala	Ser	Ala	Gly	Leu	Ser	Ala	Ala	Asp	Val	Asp	Val	Val	Glu	Ala
3860						3865					3870			
His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu	Ala	Gln	Ala
3875						3880					3885			

Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Glu	His	Thr	Asp	Glu	Gln	Pro	Leu
3890						3895					3900			
Leu	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Phe	Gly	His	Thr	Gln	Ala	Ala
3905						3910					3915			
Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Ile	Val	Gln	Ala	Met	Arg	His
3920						3925					3930			
Gly	Val	Val	Pro	Lys	Thr	Leu	His	Val	Asp	Glu	Pro	Thr	Pro	His
3935						3940					3945			
Val	Asp	Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu	Leu	Thr	Glu	Gln	Val
3950						3955					3960			
Ala	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Ala	Ile	Ser	Ser
3965						3970					3975			
Phe	Gly	Phe	Ser	Gly	Thr	Asn	Ala	His	Ala	Ile	Ile	Glu	Gln	Ala
3980						3985					3990			
Pro	Asp	Pro	Ala	Pro	Glu	Asp	Leu	Pro	Asp	Ala	Gly	Pro	Asp	Val
3995						4000					4005			
Arg	Pro	Glu	Pro	Ala	Arg	Thr	Pro	Gly	Ser	Leu	Pro	Trp	Leu	Leu
4010						4015					4020			
Ser	Ala	Lys	Gly	Ala	Asp	Ala	Leu	Arg	Asp	Gln	Ala	Ala	Arg	Leu
4025						4030					4035			
Arg	Ala	His	Ala	Ile	Gly	His	Pro	Glu	Leu	Ser	Leu	Ala	Asp	Ile
4040						4045					4050			
Gly	Tyr	Ala	Leu	Ala	Thr	Ser	Arg	Thr	Ala	Leu	Asp	Arg	Arg	Ala
4055						4060					4065			
Ala	Val	Val	Ala	Gly	Asp	Arg	Glu	Glu	Phe	Leu	Ala	Gly	Leu	Ala
4070						4075					4080			
Ala	Leu	Ala	Glu	Gly	Ala	Thr	Ala	Ala	Gly	Leu	Thr	Glu	Gly	Ser
4085						4090					4095			
Pro	Ala	Gly	Gly	Lys	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser
4100						4105					4110			
Gln	Arg	Leu	Ala	Met	Gly	Arg	Glu	Leu	Tyr	Ser	Ala	His	Pro	Val
4115						4120					4125			
Phe	Ala	Arg	Ala	Leu	Asp	Ala	Val	Cys	Asp	Gly	Leu	Ala	Leu	Asp
4130						4135					4140			
Val	Pro	Leu	Lys	Gln	Val	Leu	Phe	Gly	Ser	Asp	Ala	Asp	Leu	Leu
4145						4150					4155			
Asp	Arg	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val
4160						4165					4170			
Ala	Leu	Phe	Arg	Leu	Val	Glu	Ser	Trp	Gly	Leu	Lys	Pro	Asp	Phe
4175						4180					4185			

Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Thr	Ala	Ala	His	Val	Ala	
4190						4195					4200				
Gly	Val	Leu	Ser	Leu	Asp	Asp	Ala	Cys	Thr	Leu	Val	Ala	Ala	Arg	
4205						4210					4215				
Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro	Thr	Gly	Gly	Val	Met	Ile	Ala	
4220						4225					4230				
Val	Glu	Ala	Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	Asp	Arg	
4235						4240					4245				
Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	
4250						4255					4260				
Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Ala	Glu	Ser	Phe	Thr	Gly	
4265						4270					4275				
Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser	Pro	
4280						4285					4290				
His	Met	Asp	Gly	Met	Leu	Asp	Ala	Phe	Arg	Glu	Val	Ala	Glu	Gly	
4295						4300					4305				
Leu	Ser	Tyr	Gly	Thr	Pro	Leu	Ile	Pro	Val	Val	Ser	His	Leu	Thr	
4310						4315					4320				
Gly	Thr	Leu	Val	Thr	Asp	Glu	Met	Arg	Ser	Pro	Asp	Phe	Trp	Val	
4325						4330					4335				
Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg	Thr	
4340						4345					4350				
Leu	Glu	Asp	Ala	Gly	Val	Thr	Thr	Tyr	Ile	Glu	Leu	Gly	Pro	Gly	
4355						4360					4365				
Gly	Val	Leu	Ser	Ala	Met	Gly	Gln	Ser	Cys	Val	Thr	Arg	Asp	Asp	
4370						4375					4380				
Ala	Ala	Phe	Leu	Pro	Ala	Leu	Arg	Ala	Asp	Arg	Ser	Glu	Glu	Glu	
4385						4390					4395				
Thr	Leu	Thr	Ser	Ala	Val	Ala	Arg	Ala	His	Leu	Arg	Gly	Ile	Thr	
4400						4405					4410				
Val	Asp	Trp	Asp	Ala	Tyr	Tyr	Ser	Gly	Thr	Gly	Ala	Arg	Arg	Val	
4415						4420					4425				
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<400> 33

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Gln	Glu	Pro	Ile	Ala	Ile	Val	Ala	Met	Ser	Cys	Arg	Tyr	Pro	Gly	Gly	35	40	45	
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Pro	Glu	Leu	Asp	Ala	Gly	Tyr	Trp	Phe	Gln	Asn	Leu	Arg	Arg	Thr	Val	
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 Thr Val Glu Asp Ala Gly Arg Glu Ala Ala Val Leu Gly Ser Leu Arg  
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 Arg Gly Glu Gly Gly Leu Glu Arg Phe Trp Leu Ser Leu Gly Glu Ala  
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 Trp Val Arg Gly Val Ala Val Asp Trp His Ala Val Phe Ala Gly Thr  
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 Gly Ala Arg Arg Val Asp Leu Pro Thr Tyr Ala Phe Gln Gln Glu His  
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Glu Asp Gln Val Ala Val	Arg Ala Ser Gly Leu	Phe Val Arg Arg
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Leu His Glu Leu Thr Arg	Glu Leu Asp Leu Ser	Ala Phe Val Phe
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Tyr Ala Pro Gly Asn Ala	Phe Leu Asp Ala Phe	Ala Glu Tyr Arg
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Arg Ala Ser Gly Leu Pro	Ala Thr Ser Ile Ala	Trp Gly Pro Trp
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Gly Asp Gly Gly Met Ala	Glu Gly Ala Val Gly	Asp Arg Met Arg
1385	1390	1395
Arg His Gly Val Ile Glu	Met Ser Pro Glu Arg	Ala Val Ala Ala
1400	1405	1410
Leu Gln His Ala Leu Asp	Arg Asp Glu Thr Thr	Leu Thr Val Ala
1415	1420	1425

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Ala Arg	Pro Leu Leu His	Asp Leu Pro Glu Ala Arg	Glu Val Met
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Asp Ala	Thr Arg Thr Glu	Ala Ala Glu Asp Thr Gly	Ser Ala Ala
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Ala Leu	Ala Gln Gln Leu Thr	Gly Arg Pro Glu Ala	Glu Gln Glu
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Arg Leu	Leu Leu Glu Leu Val	Arg Thr Ala Val Ala	Ala Val Leu
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Gly Thr	Ser Tyr Thr Arg	Glu Gly Gly Phe Leu Ser	Asp Ala Ala
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Ala Phe	Glu Arg Ala Gly	Ile Asp Pro Gln Thr Leu	Arg Gly Ser
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Gln Ser	Gly Val Phe Val	Gly Thr Asn Gly Ser Asp	Tyr Ser Asn
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Leu Val	Arg Ala Gly Ala	Asp Gly Leu Glu Gly His	Leu Ala Thr
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Met	Val	Ser	Leu	Ala	Glu	Val	Trp	Arg	Ala	Ala	Gly	Val	Arg	Pro
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Arg	Glu	Val	Ala	Glu	Ser	Val	Ala	Tyr	Ala	Pro	Pro	Val	Ile	Pro	Ile
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Val	Ser	Asn	Leu	Thr	Gly	Ala	Ser	Val	Thr	Ala	Glu	Glu	Ile	Cys	Ala
			820					825					830		
Ala	Asp	Tyr	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp
		835					840					845			
Gly	Val	Arg	Lys	Leu	Ser	Ala	Gln	Gly	Val	Thr	Thr	Phe	Val	Glu	Val
	850					855					860				
Gly	Pro	Gly	Gly	Val	Leu	Thr	Ala	Leu	Ala	Gln	Glu	Cys	Val	Thr	Gly
865					870					875					880
Gln	Asp	Ala	Val	Phe	Val	Pro	Val	Leu	Arg	Gly	Asp	Arg	Pro	Glu	Ala
			885						890					895	
Ala	Ala	Phe	Ala	Thr	Ala	Val	Ala	Gln	Ala	His	Val	His	Gly	Val	Ala
			900					905					910		
Val	Asp	Trp	Ser	Ala	Val	Phe	Ala	Gly	Arg	Gly	Ala	Thr	Arg	Ile	Asp
		915					920					925			
Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Glu	Leu	Tyr	Trp	Pro	Glu	Gln	Pro
	930					935					940				
Thr	Ala	Trp	Ala	Gly	Asp	Val	Thr	Ala	Ala	Gly	Ile	Gly	Ala	Ala	Asp
945					950					955					960
His	Pro	Leu	Leu	Gly	Ala	Ala	Ile	Ala	Leu	Ala	Asp	Gly	Asp	Gly	His
			965					970					975		
Leu	Phe	Thr	Gly	Arg	Leu	Ser	Leu	Ala	Thr	His	Pro	Trp	Leu	Ala	Asp
		980						985					990		
His	Thr	Val	Met	Asp	Thr	Val	Leu	Leu	Pro	Gly	Thr	Ala	Phe	Val	Glu
		995					1000					1005			
Leu	Ala	Leu	Gln	Ala	Gly	Asp	His	Thr	Gly	Cys	Asp	Leu	Leu	Asp	
	1010					1015					1020				
Glu	Leu	Thr	Leu	Glu	Ala	Pro	Leu	Val	Leu	Pro	Pro	His	Gly	Gly	
	1025					1030					1035				
Val	Gln	Ile	Gln	Leu	Ala	Val	Gly	Ala	Pro	Asp	Ala	Glu	Gly	Arg	
	1040					1045					1050				
Arg	Ser	Leu	Thr	Leu	His	Ser	Arg	Pro	Glu	Asp	Ala	Ala	Asp	Asp	
	1055					1060					1065				
Thr	Trp	Gly	Glu	Gly	Ala	Trp	Thr	Arg	His	Ala	Thr	Gly	Phe	Leu	



1070	1075	1080
Ala Thr 1085	Ala Arg Glu Pro Leu 1090	Ala Asp Leu Thr 1095
Ser Trp 1100	Ala Thr Lys Val Asp 1105	Val Glu Gly Leu 1110
Tyr Ala 1115	Ser Gly Phe Ala Tyr 1120	Gly Pro Val Phe 1125
Gln Gly 1130	Trp Gln Arg Gly Asp 1135	Glu Val Phe Ala 1140
Glu Val 1145	Gln Ala His Ala Glu 1150	Ala Ala Leu Phe 1155
Gly Leu 1160	Leu Asp Ala Ala Leu 1165	His Ala Val Gly 1170
Ile Gly 1175	Asp Thr Glu His Gly 1180	Arg Leu Pro Phe 1185
Ser Trp 1190	Ser Leu Arg Ala Val Gly 1195	Ala Arg Ala Leu 1200
Arg Val 1205	Arg Leu Ala Pro Ala 1210	Gly Asn Asp Thr Val Ser Val Thr 1215
Leu Ala 1220	Asp Glu Thr Gly Ala 1225	Pro Val Ala Ala Val Asp Ala Leu 1230
Leu Leu 1235	Arg Pro Val Ser Pro 1240	Asp Gln Val His Ala Ala Arg Thr 1245
Ala Phe 1250	His Asp Ser Leu Phe 1255	Arg Val Glu Trp Thr Gly Thr Pro 1260
Leu Pro 1265	Ala Ala Thr Thr Val 1270	Ala Ala Gly Gln Trp Ala Leu Leu 1275
Gly Glu 1280	Pro Arg Thr Glu Phe 1285	Thr Ala Ala Leu Pro Thr Ala Ala 1290
Thr His 1295	Ala Asp Leu Ala Ala 1300	Leu Gly Ala Ala Leu Asp Ala Gly 1305
Gly Pro 1310	Val Pro Arg Ala Val 1315	Ile Val Pro Phe Ser Ala Ser Gly 1320
Ala Pro 1325	Ser Ala Thr Pro Val 1330	Asp Ala Ala Leu Pro Thr Ala Val 1335
Ala Asp 1340	Ala Leu His Arg Thr 1345	Leu Glu Leu Ala Gln Ala Trp Leu 1350
Ala Asp 1355	Asp Arg Phe Ala Gly 1360	Ser Arg Leu Val Phe Val Thr Arg 1365
Asp Ala	Val Ala Thr Thr Ala	Gly Ser Asp Val Ala Asp Leu Ala

1370	1375	1380
His Ala Pro Leu Trp Gly Leu 1385	Leu Arg Ser Ala Leu 1390	Gln Ser Glu His 1395
Pro Asp Arg Phe Val Leu 1400	Leu Asp Leu Asp Gly 1405	Arg Glu Asp Ser 1410
Leu Arg Ala Leu Pro Ala 1415	Ala Leu Ala Thr Ala 1420	Glu Pro Gln Leu 1425
Ala Leu Arg Ala Gly Lys 1430	Ala Leu Val Pro Arg 1435	Leu Ala Arg Val 1440
Ala Ala Ala Pro Gly Gln 1445	Glu Ala Pro Ala Leu 1450	Asp Pro Asp Gly 1455
Thr Ala Leu Val Thr Gly 1460	Ala Thr Gly Thr Leu 1465	Gly Gly Leu Val 1470
Ala Arg His Leu Val Ala 1475	Ala His Gly Val Arg 1480	His Leu Leu Leu 1485
Thr Ser Arg Arg Gly Glu 1490	Ala Ala Gly Ala 1495	Ala Glu Leu Ala 1500
Ala Gly Leu Arg Glu Leu 1505	Gly Ala Glu Val Thr 1510	Ile Ala Ala Cys 1515
Asp Ala Ala Asp Arg Asp 1520	Ala Leu Ala Ala Leu 1525	Ile Gly Ser Val 1530
Pro Ala Glu His Pro Leu 1535	Thr Ala Val Val His 1540	Thr Ala Gly Val 1545
Leu Asp Asp Gly Val Leu 1550	Glu Ala Leu Thr Pro 1555	Glu Arg Ile Asp 1560
Ala Val Leu Pro Ala Lys 1565	Val Asp Ala Ala Val 1570	His Leu His Glu 1575
Leu Thr Arg Glu Leu Asp 1580	Leu Ala Ala Phe Val 1585	Leu Phe Ser Ala 1590
Ala Ala Gly Thr Leu Gly 1595	Gly Pro Gly Gln Ala 1600	Asn Tyr Ala Ala 1605
Ala Asn Thr Phe Leu Asp 1610	Ala Leu Ala His Arg 1615	Arg Arg Ala Glu 1620
Gly Leu Pro Ala Thr Ala 1625	Leu Ala Trp Gly Leu 1630	Trp Ala Glu Arg 1635
Ser Gly Met Thr Gly Asp 1640	Leu Ala Asp Ala Asp 1645	Leu Glu Arg Ile 1650
Ser Arg Ala Gly Val Ala 1655	Ala Leu Ser Ser Ala 1660	Glu Gly Leu Ala 1665
Leu Leu Asp Thr Ala Arg 1670	Ala Val Gly Asp Pro 1675	Thr Ala Val Pro 1680

1670					1675					1680				
Met	His	Leu	Asp	Leu	Ala	Ser	Leu	Arg	His	Ala	Asp	Ala	Ser	Met
	1685					1690					1695			
Val	Pro	Ala	Leu	Leu	Arg	Gly	Leu	Val	Arg	Ala	Pro	Ala	Arg	Arg
	1700					1705					1710			
Ser	Val	Glu	Ser	Pro	Gly	Ala	Ala	Pro	Ala	Gly	Gly	Leu	Ala	Glu
	1715					1720					1725			
Arg	Leu	Leu	Pro	Leu	Thr	Ala	Ala	Glu	Arg	Asp	Arg	Leu	Leu	Leu
	1730					1735					1740			
Asp	Thr	Val	Arg	Val	Gln	Val	Ala	Ala	Val	Leu	Gly	Tyr	Pro	Gly
	1745					1750					1755			
Pro	Glu	Ala	Val	Asp	Pro	Gly	Arg	Ala	Phe	Lys	Glu	Leu	Gly	Phe
	1760					1765					1770			
Asp	Ser	Leu	Thr	Ala	Val	Glu	Leu	Arg	Asn	Arg	Leu	Gly	Ser	Ala
	1775					1780					1785			
Thr	Gly	Val	Arg	Leu	Pro	Ala	Thr	Leu	Val	Phe	Asp	Tyr	Pro	Thr
	1790					1795					1800			
Pro	Asn	Ala	Leu	Ser	Ala	Phe	Leu	Arg	Thr	Glu	Leu	Leu	Gly	Asp
	1805					1810					1815			
Ala	Ala	Asp	Ser	Ala	Pro	Val	Ala	Ala	Val	Thr	Ala	Arg	Asp	Asp
	1820					1825					1830			
Glu	Pro	Ile	Ala	Ile	Val	Gly	Met	Ser	Cys	Arg	Tyr	Pro	Gly	Gly
	1835					1840					1845			
Val	Thr	Thr	Pro	Glu	Glu	Leu	Trp	Gln	Leu	Val	Ala	Gly	Ser	Val
	1850					1855					1860			
Asp	Ala	Ile	Ser	Pro	Phe	Pro	Thr	Asp	Arg	Gly	Trp	Asn	Leu	Asp
	1865					1870					1875			
Ala	Leu	Tyr	Asp	Ala	Asp	Pro	Gly	Arg	Ala	Gly	Thr	Ser	Tyr	Thr
	1880					1885					1890			
Arg	Glu	Gly	Gly	Phe	Leu	His	Asp	Ala	Ala	Asp	Phe	Asp	Pro	Asp
	1895					1900					1905			
Val	Phe	Gly	Ile	Asn	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	His
	1910					1915					1920			
Gln	Arg	Leu	Leu	Leu	Glu	Thr	Ser	Trp	Glu	Ala	Phe	Glu	Gln	Ala
	1925					1930					1935			
Gly	Ile	Ala	Pro	Ser	Ser	Met	Arg	Gly	Ser	Arg	Thr	Gly	Val	Phe
	1940					1945					1950			
Ala	Gly	Val	Met	Tyr	His	Asp	Tyr	Leu	Thr	Arg	Leu	Pro	Ala	Val
	1955					1960					1965			
Pro	Glu	Gly	Leu	Glu	Gly	Tyr	Leu	Gly	Thr	Gly	Thr	Ala	Gly	Ser

	1970		1975		1980
Val	Ala Ser Gly Arg Ile	Ser	Tyr Thr Phe Gly	Leu	Glu Gly Pro
	1985		1990		1995
Ala	Val Thr Val Asp Thr	Ala	Cys Ser Ser Ser	Leu	Val Ala Leu
	2000		2005		2010
His	Leu Ala Ala Gln Ala	Leu	Arg Asn Gly Glu	Cys	Asp Met Ala
	2015		2020		2025
Leu	Ala Gly Gly Val Thr	Val	Met Ser Thr Pro	Asp	Thr Phe Ile
	2030		2035		2040
Asp	Phe Ser Arg Gln Arg	Gly	Leu Ser Gly Asn	Gly	Arg Cys Lys
	2045		2050		2055
Ser	Phe Ser Ala Asp Ala	Asp	Gly Thr Gly Trp	Ala	Glu Gly Ala
	2060		2065		2070
Gly	Met Ile Leu Val Glu	Arg	Leu Ser Asp Ala	Arg	Arg Asn Gly
	2075		2080		2085
His	Gln Val Leu Ala Val	Val	Arg Gly Thr Ala	Val	Asn Gln Asp
	2090		2095		2100
Gly	Ala Ser Asn Gly Leu	Thr	Ala Pro Asn Gly	Pro	Ser Gln Gln
	2105		2110		2115
Arg	Val Ile Arg Gln Ala	Leu	Ala Asn Ala Gly	Leu	Thr Thr Ala
	2120		2125		2130
Glu	Val Asp Val Val Glu	Ala	His Gly Thr Gly	Thr	Thr Leu Gly
	2135		2140		2145
Asp	Pro Ile Glu Ala Gln	Ala	Leu Leu Ala Thr	Tyr	Gly Gln Asp
	2150		2155		2160
Arg	Pro Ala Gly Gln Pro	Leu	Arg Leu Gly Ser	Ile	Lys Ser Asn
	2165		2170		2175
Ile	Gly His Thr Gln Ala	Ala	Ala Gly Ala Ala	Gly	Ile Ile Lys
	2180		2185		2190
Met	Ile Leu Ala Met Arg	His	Gly Val Met Pro	Pro	Ser Leu His
	2195		2200		2205
Ile	Gly Glu Pro Ser Pro	His	Ile Asp Trp Thr	Ala	Gly Ala Val
	2210		2215		2220
Ser	Leu Leu Thr Glu Ala	Ala	Glu Trp Pro Asp	Ala	Gly Arg Pro
	2225		2230		2235
Arg	Arg Ala Gly Ile Ser	Ser	Phe Gly Val Ser	Gly	Thr Asn Ala
	2240		2245		2250
His	Val Ile Ile Glu Gln	Pro	Pro Val Glu Glu	Pro	Ala Thr Ala
	2255		2260		2265
Thr	Glu Thr Gly Ser Gly	Thr	Gly Leu Pro Ala	Gly	Thr Pro Leu

2270	2275	2280
Pro Phe Ala Leu Ser Gly Arg Thr Pro Ala Ala Leu Arg Ala Gln		
2285	2290	2295
Ala Ala Arg Leu Ile Gly His Leu Ala Pro Arg Pro Glu Ala Ala		
2300	2305	2310
Pro Ala Asp Val Ala Leu Ser Leu Ala Thr Thr Arg Thr Ala Leu		
2315	2320	2325
Asp Arg Arg Ala Ala Val Ile Ala His Asp Arg Thr Glu Leu Leu		
2330	2335	2340
Ala Gly Leu Thr Ala Leu Ala Glu Gly His Asp Ser Ala Arg Leu		
2345	2350	2355
Val Gln His Thr Ala Ala Asp Gly Arg Thr Ala Ile Leu Phe Thr		
2360	2365	2370
Gly Gln Gly Ser Gln Arg Pro Gly Met Gly Arg Glu Leu Tyr Glu		
2375	2380	2385
Thr Tyr Pro Ala Phe Ala Glu Ala Leu Asp Ala Val Cys Ala Glu		
2390	2395	2400
Leu Asp Pro His Leu Glu Gln Pro Leu Lys Glu Val Leu Phe Thr		
2405	2410	2415
Ala Asp Gly Asp Leu Leu Asn Arg Thr Gly Arg Thr Gln Pro Ala		
2420	2425	2430
Leu Phe Ala Leu Glu Thr Ala Leu Tyr Arg Leu Val Glu Ser Trp		
2435	2440	2445
Gly Val Arg Pro Asp Phe Val Ala Gly His Ser Ile Gly Glu Ile		
2450	2455	2460
Thr Ala Ala His Val Ala Gly Val Leu Ser Leu Pro Asp Ala Ala		
2465	2470	2475
Thr Leu Val Ala Ala Arg Gly Arg Leu Met Gln Glu Leu Pro Glu		
2480	2485	2490
Gly Gly Ala Met Ile Ala Leu Thr Ala Thr Glu Asp Glu Val Leu		
2495	2500	2505
Pro Leu Leu Ala Gly His Glu Asp Arg Ile Gly Ile Ala Ala Val		
2510	2515	2520
Asn Ser Ala Ser Ser Val Val Ile Ser Gly Glu Glu Gly Leu Ala		
2525	2530	2535
Leu Glu Ile Ala Ala Glu Phe Glu Arg Arg Gly Arg Arg Thr Lys		
2540	2545	2550
Arg Leu Thr Val Ser His Ala Phe His Ser Pro Leu Met Asp Gly		
2555	2560	2565
Met Leu Asp Ala Phe Arg Glu Val Ala Glu Ser Leu Thr Tyr Arg		

2570	2575	2580
Ala Pro 2585	Ala Ile Pro Val 2590	Val Thr Leu Leu Thr Gly Thr Val Ala 2595
Gly Asp 2600	Glu Leu Arg Thr 2605	Ala Glu His Trp Val Ser His Val Arg 2610
Glu Ala 2615	Val Arg Phe Leu 2620	Asp Gly Ile Arg Thr Leu Asp Ala Glu 2625
His Val 2630	Thr Thr Tyr Leu 2635	Glu Leu Gly Pro Gln Gly Val Leu Ser 2640
Gly Leu 2645	Gly Arg Asp Cys 2650	Leu Thr Asp Pro Ala Asp Pro Ala Asp 2655
Thr Ala 2660	Val Phe Val Pro 2665	Ala Leu Arg Arg Asp Arg Gly Glu Ala 2670
Glu Ala 2675	Leu Thr Ala Ala 2680	Ile Ala Ala Ala His Thr Arg Gly Val 2685
Pro Leu 2690	Asp Trp Ser Ala 2695	Tyr Phe Ala Gly Thr Gly Ala Arg Arg 2700
Val Glu 2705	Leu Pro Thr Tyr 2710	Ala Phe Gln Arg Glu Arg Phe Trp Leu 2715
Glu Ala 2720	Pro Ala Gly Tyr 2725	Ile Gly Asp Val Glu Ser Ala Gly Met 2730
Gly Ala 2735	Ala His His Pro 2740	Leu Leu Gly Ala Ala Val Ala Leu Ala 2745
Asp Gly 2750	Glu Gly Phe Leu 2755	Phe Thr Gly Arg Leu Ser Leu Asp Thr 2760
His Pro 2765	Trp Leu Ala Asp 2770	His Ala Val Met Gly Asn Val Leu Leu 2775
Pro Gly 2780	Thr Ala Phe Val 2785	Glu Leu Ala Ile Arg Ala Gly Asp Gln 2790
Ala Gly 2795	Cys Asp Leu Leu 2800	Glu Glu Leu Thr Leu Glu Ala Pro Leu 2805
Ile Leu 2810	Ala Pro Gln Ala 2815	Ala Ala Arg Leu Gln Ile Val Val Gly 2820
Ala Pro 2825	Asp Gly Ser Gly 2830	Arg Arg Thr Leu Asp Val Tyr Ser Ser 2835
Asp Pro 2840	Asp Ala Pro Ala 2845	Glu Glu Pro Trp Thr Arg His Ala Gly 2850
Gly Ile 2855	Leu Ala Thr Gly 2860	Gln Ala Pro Ala Phe Asp Leu Thr 2865
Ala Trp	Pro Pro Pro Gly Ala	Glu Ala Val Gly Val Asp Gly Leu

2870						2875				2880				
Tyr	Glu	His	Leu	Gly	Arg	Gly	Gly	Phe	Ala	Tyr	Gly	Pro	Val	Phe
	2885						2890				2895			
Gln	Gly	Leu	Arg	Ala	Ala	Trp	Leu	Leu	Gly	Asp	Asp	Val	Tyr	Ala
	2900						2905				2910			
Glu	Val	Ala	Leu	Pro	Asp	Asp	Arg	Gln	Ala	Glu	Ala	Ala	Arg	Phe
	2915						2920				2925			
Gly	Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Ala	Leu	His	Ala	Thr	Phe
	2930						2935				2940			
Val	Gln	Pro	Ser	Pro	Asp	Gly	Asp	Gln	Gln	Gly	Arg	Leu	Pro	Phe
	2945						2950				2955			
Ser	Trp	Arg	Asp	Val	Ser	Leu	His	Ala	Val	Gly	Ala	Ser	Ala	Leu
	2960						2965				2970			
Arg	Val	Arg	Leu	Thr	Pro	Asp	Gly	Arg	Asp	Thr	Leu	Ser	Leu	Gln
	2975						2980				2985			
Leu	Ala	Asp	Thr	Thr	Gly	Ala	Pro	Val	Ala	Ala	Val	Gly	His	Leu
	2990						2995				3000			
Thr	Leu	Arg	Pro	Val	Ser	Ala	Asp	Gln	Leu	Gly	Ser	Ala	Arg	Ser
	3005						3010				3015			
Ala	His	His	Glu	Ser	Leu	Phe	Arg	Ile	Asp	Trp	Ala	Thr	Val	Pro
	3020						3025				3030			
Leu	Pro	Ser	Asp	Ala	Pro	Ala	Ala	Thr	Asp	Glu	Trp	Ala	Val	Ile
	3035						3040				3045			
Ala	Ala	Asp	Gly	Gly	Thr	Asp	Gly	Gly	Thr	Asp	Gly	Gly	Thr	Asp
	3050						3055				3060			
Gly	Gly	Ile	Pro	Ala	Ala	Leu	Pro	Gly	Arg	Val	His	Thr	Gly	Leu
	3065						3070				3075			
Asp	Ala	Leu	Gly	Ala	Ala	Val	Asp	Ala	Gly	Ala	Pro	Val	Pro	Ala
	3080						3085				3090			
His	Val	Leu	Val	His	His	Thr	Pro	Ala	Ala	Thr	Thr	Ala	Asp	Ala
	3095						3100				3105			
Val	His	Ala	Ala	Thr	His	Glu	Ala	Leu	Arg	Leu	Val	Arg	Ala	Trp
	3110						3115				3120			
Leu	Ala	Asp	Asp	Arg	Phe	Ala	Ala	Ser	Arg	Leu	Val	Phe	Val	Thr
	3125						3130				3135			
Arg	Gly	Ala	Ile	Ala	Thr	Gln	Ser	Asp	Trp	Asp	Leu	Thr	Asp	Leu
	3140						3145				3150			
Thr	His	Ala	Pro	Val	Trp	Gly	Leu	Val	Arg	Thr	Ala	Gln	Ser	Glu
	3155						3160				3165			
Asn	Pro	Asp	Arg	Phe	Val	Leu	Ala	Asp	Leu	Asp	Ala	Asp	Pro	Ala

3170	3175	3180
Ser Thr Asp Ala Leu Ala	Ala Ala Leu Ala Thr	Gly Glu Pro Gln
3185	3190	3195
Leu Ala Val Arg Arg Gly	Thr Val His Ala Pro	Arg Leu Ala Arg
3200	3205	3210
Val Pro Ala Ala Thr Pro	Leu Thr Pro Pro Pro	Gly Glu Ser Ala
3215	3220	3225
Trp Arg Met Asp Ile Glu	Asp Lys Gly Thr Leu	Asp His Leu Thr
3230	3235	3240
Leu Val Pro Ser Pro Glu	Ser Ala Ala Pro Leu	Glu Pro Gly Gln
3245	3250	3255
Val Arg Val Ala Val Arg	Ala Ala Gly Leu Asn	Phe Arg Asp Val
3260	3265	3270
Leu Asn Ala Leu Gly Met	Tyr Pro Gly Asp Pro	Gly Leu Met Gly
3275	3280	3285
Ser Glu Gly Ala Gly Ile	Val Val Glu Thr Gly	Pro Gly Val Thr
3290	3295	3300
Gly Leu Ala Pro Gly Asp	Arg Val Met Gly Met	Leu Pro Gly Ser
3305	3310	3315
Phe Gly Pro Leu Ala Val	Val Asp Arg Arg Met	Ile Ala Pro Met
3320	3325	3330
Pro Glu Gly Trp Thr Phe	Ala Glu Ala Ala Ser	Val Pro Ile Val
3335	3340	3345
Phe Met Thr Ala Tyr Tyr	Ala Leu His Asp Leu	Ala Gly Leu Gln
3350	3355	3360
Gly Gly Glu Ser Leu Leu	Val His Ala Ala Ala	Gly Gly Val Gly
3365	3370	3375
Met Ala Ala Val Gln Leu	Ala Arg His Trp Gly	Ala Asp Val Tyr
3380	3385	3390
Ala Thr Ala Ser Pro Ala	Lys Trp Asp Thr Leu	Arg Gly Leu Gly
3395	3400	3405
Leu Gly Asp Asp Arg Ile	Ala Ser Ser Arg Thr	Leu Asp Phe Glu
3410	3415	3420
Glu Thr Phe Arg Thr Ala	Thr Gly Gly Arg Gly	Val Asp Val Val
3425	3430	3435
Leu Asp Ser Leu Ala Arg	Glu Phe Val Asp Ala	Ser Leu Arg Leu
3440	3445	3450
Leu Pro Arg Gly Gly Arg	Phe Val Glu Met Gly	Lys Thr Asp Val
3455	3460	3465
Arg Ser Pro Gln Asp Val	Ala Asp Ala His Pro	Gly Val Ser Tyr



3470		3475		3480
Gln Ala Phe Asp Leu Thr	Glu Ala Gly Leu Asp	Arg Ile Gln Glu		
3485	3490	3495		
Met Leu Thr Glu Leu Leu	Thr Leu Phe Arg Ser	Gly Ala Leu Arg		
3500	3505	3510		
Pro Val Pro Val Ser Ala	Trp Asp Leu Arg Gln	Ala Pro Glu Ala		
3515	3520	3525		
Phe Arg Tyr Leu Ser Gln	Ala Arg His Val Gly	Lys Ile Val Leu		
3530	3535	3540		
Thr Leu Pro Gly Glu Trp	Asn Ser Gln Gly Thr	Val Leu Ile Thr		
3545	3550	3555		
Gly Gly Thr Gly Thr Leu	Gly Ala Val Val Ala	Arg His Ala Val		
3560	3565	3570		
Thr Thr Arg Gly Ala Arg	Arg Leu Leu Leu Thr	Ser Arg Arg Gly		
3575	3580	3585		
Glu Ala Ala Ala Gly Ala	Ala Glu Leu Ala Ala	Glu Leu Arg Glu		
3590	3595	3600		
Leu Gly Ala Glu Val Thr	Ile Ala Ala Cys Asp	Ala Ala Asp Arg		
3605	3610	3615		
Asp Ala Leu Ala Ala Leu	Ile Glu Ser Ile Pro	Ser Glu His Pro		
3620	3625	3630		
Leu Thr Ala Val Ile His	Thr Ala Gly Val Leu	Asp Asp Gly Val		
3635	3640	3645		
Val Asp Ser Leu Thr Pro	Glu Arg Leu Ser Thr	Val Leu Arg Pro		
3650	3655	3660		
Lys Val Asp Ala Ala Trp	Asn Leu His Glu Leu	Thr Arg His Leu		
3665	3670	3675		
Asp Leu Ala Asp Phe Val	Leu Phe Ser Ser Ala	Ala Gly Thr Phe		
3680	3685	3690		
Gly Gly Ala Gly Gln Ala	Asn Tyr Ala Ala Ala	Asn Val Phe Leu		
3695	3700	3705		
Asp Ala Leu Ala Arg His	Arg His Ala His Gly	Leu Ala Ala Thr		
3710	3715	3720		
Ser Leu Ala Trp Gly Leu	Trp Ala Glu Ala Ser	Gly Met Thr Gly		
3725	3730	3735		
Glu Leu Asp Thr Ala Asp	Lys Asp Arg Met Thr	Arg Ser Gly Val		
3740	3745	3750		
Leu Gly Leu Ser Ser Glu	Glu Gly Val Ala Leu	Leu Asp Thr Ala		
3755	3760	3765		
Arg Leu Thr Gly Asp Ala	Leu Leu Val Pro Met	His Leu Asp Leu		

3770	3775	3780
Ala Pro Leu Arg Arg Thr Asp 3785	Ala Ser Met Val Pro 3790	Ala Leu Leu 3795
Arg Gly Leu Val Arg Ala Pro 3800	Ala Arg Arg Ala Val 3805	Gly Ala Thr 3810
Ala Ala Gly Ala Gly Thr Pro 3815	Leu Val Glu Arg Leu 3820	Val Arg Leu 3825
Pro Glu Asn Glu Arg Asp Pro 3830	Leu Leu Leu Asp Leu 3835	Val Arg Gln 3840
Gln Val Ala Ala Val Leu Gly 3845	His Ala Thr Pro Asp 3850	Ala Val Glu 3855
Pro Thr Arg Ala Phe Lys Asp 3860	Leu Gly Phe Asp Ser 3865	Leu Thr Ala 3870
Val Glu Phe Arg Asn Arg Leu 3875	Gly Ala Thr Ala Gly 3880	Ile Arg Leu 3885
Pro Ala Thr Leu Val Phe Asp 3890	Tyr Pro Thr Pro Thr 3895	Val Leu Ala 3900
Gly Tyr Leu Lys Asp Glu Leu 3905	Leu Gly Ser Glu Ala 3910	Ala Ala Ala 3915
Leu Pro Lys Leu Ala Ala Thr 3920	Ala Val Glu Gly Asp 3925	Asp Pro Ile 3930
Ala Ile Val Ala Met Ser Cys 3935	Arg Phe Pro Gly Asp 3940	Val Arg Thr 3945
Pro Glu Asp Leu Trp Glu Leu 3950	Leu Ala Glu Gly Arg 3955	Asp Gly Ile 3960
Ser Asp Leu Pro Asp Asp Arg 3965	Gly Trp Asp Thr Glu 3970	Ala Leu Tyr 3975
Asp Pro Asp Pro Asp Ser Pro 3980	Gly Thr Ser Tyr Ala 3985	Arg Glu Gly 3990
Gly Phe Phe Tyr Asp Ala His 3995	His Phe Asp Pro Ala 4000	Phe Phe Gly 4005
Ile Asn Pro Arg Glu Ala Leu 4010	Ala Met Asp Pro Gln 4015	Gln Arg Leu 4020
Leu Leu Glu Thr Ser Trp Glu 4025	Ala Phe Glu Arg Ala 4030	Gly Ile Asp 4035
Pro Thr Gly Leu Arg Gly Lys 4040	Gln Val Gly Val Phe 4045	Val Gly Gln 4050
Met His Asn Asp Tyr Val Ser 4055	Arg Leu Asn Thr Val 4060	Pro Glu Gly 4065
Val Glu Gly Tyr Leu Gly Thr 4070	Gly Gly Ser Ser Ser 4075	Ile Ala Ser 4080

4070						4075				4080				
Gly	Arg	Val	Ser	Tyr	Thr	Phe	Asp	Phe	Glu	Gly	Pro	Ala	Val	Thr
4085						4090				4095				
Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Leu	Ala
4100						4105				4110				
Ala	Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Thr	Leu	Ala	Leu	Ala	Gly
4115						4120				4125				
Gly	Val	Thr	Ile	Ile	Thr	Thr	Pro	Asp	Val	Phe	Thr	Glu	Phe	Ser
4130						4135				4140				
Arg	Gln	Arg	Gly	Leu	Ala	Ser	Asp	Gly	Arg	Cys	Lys	Pro	Phe	Ala
4145						4150				4155				
Glu	Ala	Ala	Asp	Gly	Thr	Ala	Trp	Gly	Glu	Gly	Val	Gly	Met	Leu
4160						4165				4170				
Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Gln	Val
4175						4180				4185				
Leu	Ala	Val	Val	Arg	Gly	Thr	Ala	Val	Asn	Gln	Asp	Gly	Ala	Ser
4190						4195				4200				
Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile
4205						4210				4215				
Arg	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Leu	Thr	Ala	Ala	Glu	Val	Asp
4220						4225				4230				
Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Arg	Leu	Gly	Asp	Pro	Ile
4235						4240				4245				
Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Asp	Arg	Pro	Glu
4250						4255				4260				
Gly	Ser	Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Phe	Gly	His
4265						4270				4275				
Thr	Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Met	Val	Gln
4280						4285				4290				
Ala	Met	His	His	Gly	Val	Leu	Pro	Lys	Thr	Leu	His	Val	Asp	Ala
4295						4300				4305				
Pro	Ser	Pro	His	Val	Asp	Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu	Leu
4310						4315				4320				
Thr	Glu	Gln	Met	Ala	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala
4325						4330				4335				
Gly	Val	Ser	Ser	Phe	Gly	Met	Ser	Gly	Thr	Asn	Ala	His	Ala	Ile
4340						4345				4350				
Ile	Glu	Leu	Ala	Pro	Asp	Ala	Ala	Thr	Pro	Ser	Ala	Ala	Arg	Pro
4355						4360				4365				
Glu	Pro	Ala	Pro	Ala	Ala	Leu	Pro	Trp	Asn	Leu	Ser	Ala	Arg	Thr

4370	4375	4380
Pro Asp Ala Leu Arg Ala	Gln Gly Glu Arg Leu	Leu Ser His Leu
4385	4390	4395
Glu Thr His Cys Glu Thr	His Pro Glu Thr Val	Leu Ala Asp Ile
4400	4405	4410
Gly His Ser Leu Thr Thr	Gly Arg Ala Leu Phe	Glu His Arg Ala
4415	4420	4425
Thr Val Val Ala Gly Asp	Arg Asp Gly Phe Arg	Ala Gly Leu Ala
4430	4435	4440
Ala Leu Ala Glu Gly Arg	Thr Ala Ala Gly Leu	Ile Gln Gly Ser
4445	4450	4455
Ser Ser Thr Gly Gly Arg	Thr Ala Phe Leu Phe	Thr Gly Gln Gly
4460	4465	4470
Ser Gln Arg Leu Gly Met	Gly Arg Glu Leu Tyr	Glu Ala Tyr Pro
4475	4480	4485
Val Phe Ala Arg Ala Leu	Asp Glu Val Cys Ala	Arg Leu Glu Leu
4490	4495	4500
Pro Leu Pro Leu Lys Asp	Val Leu Phe Gly Thr	Asp Thr Gly Leu
4505	4510	4515
Leu Asn Glu Thr Ala Tyr	Thr Gln Pro Ala Leu	Phe Ala Val Glu
4520	4525	4530
Val Ala Leu Phe Arg Leu	Val Glu Ser Trp Gly	Leu Lys Pro Asp
4535	4540	4545
Phe Leu Ala Gly His Ser	Ile Gly Glu Ile Ala	Ala Ala His Val
4550	4555	4560
Ala Gly Val Leu Ser Leu	Glu Asp Ala Cys Ala	Leu Val Ser Ala
4565	4570	4575
Arg Gly Arg Leu Met Gly	Ala Leu Pro Gly Gly	Gly Val Met Ile
4580	4585	4590
Ala Val Gln Ala Ser Glu	Gly Glu Val Leu Pro	Leu Leu Thr Asp
4595	4600	4605
Arg Val Ser Ile Ala Ala	Ile Asn Gly Pro Gln	Ser Val Val Ile
4610	4615	4620
Ala Gly Asp Glu Ala Asp	Ala Val Ala Ile Val	Glu Ser Phe Ser
4625	4630	4635
Asp Arg Lys Ser Lys Arg	Leu Thr Val Ser His	Ala Phe His Ser
4640	4645	4650
Pro His Met Asp Gly Met	Leu Asp Asp Phe Arg	Ala Val Ala Glu
4655	4660	4665
Gly Leu Ser Tyr Gly Ala	Pro Arg Ile Pro Val	Val Ser Asn Leu

4670	4675	4680
Thr Gly Ala Leu Val Ser Asp Glu Met Gly Ser Ala Asp Phe Trp 4685 4690 4695		
Val Arg His Val Arg Glu Ala Val Arg Phe Leu Asp Gly Ile Arg 4700 4705 4710		
Ala Leu Glu Ala Ala Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro 4715 4720 4725		
Asp Gly Ile Leu Ser Ala Met Ala Gln Glu Cys Ile Thr Gly Glu 4730 4735 4740		
Gly Ala Ala Phe Ala Pro Val Leu Arg Ala Gly Arg Asp Glu Ala 4745 4750 4755		
Glu Thr Val Leu Ser Ala Leu Ala Ala Ala His Val Arg Gly Val 4760 4765 4770		
Pro Val Asp Trp Gln Ala Phe Tyr Ala Pro Ala Gly Ala Gln Arg 4775 4780 4785		
Val Pro Leu Pro Thr Tyr Ala Phe Gln Arg Ser Val Tyr Trp Leu 4790 4795 4800		
Asp Ala Gly Arg Ala Gln Gly Asp Ile Ala Ser Ala Gly Leu Gly 4805 4810 4815		
Ala Thr Asp His Pro Leu Leu Ser Ala Ala Val Glu Leu Pro Asp 4820 4825 4830		
Ser Asp Gly Phe Leu Phe Thr Gly Arg Leu Ser Leu Ala Thr His 4835 4840 4845		
Pro Trp Leu Ala Asp His Ala Val Leu Gly Ser Val Leu Leu Pro 4850 4855 4860		
Gly Thr Ala Phe Val Glu Leu Ala Leu Arg Ala Gly Asp Gln Val 4865 4870 4875		
Gly Cys Asp Leu Ile Asp Glu Leu Thr Leu Glu Ala Pro Leu Val 4880 4885 4890		
Leu Pro Pro His Gly Gly Val Gln Leu Arg Leu Ala Val Ala Ala 4895 4900 4905		
Ala Asp Ala Thr Gly Arg Arg Thr Leu Ala Phe His Ser Arg Ser 4910 4915 4920		
Glu Asp Ala Asp Ala Gly Thr Pro Trp Thr Arg His Ala Ser Gly 4925 4930 4935		
Val Leu Ala Val Gly Ala Glu Arg Thr Pro Gln Ser Leu Thr Glu 4940 4945 4950		
Trp Pro Pro Thr Gly Ala Glu Ser Val Pro Val Asp Gly Leu Tyr 4955 4960 4965		
Glu Gly Leu Ala Glu Ser Gly Phe Gly Tyr Gly Pro Val Phe Gln		

4970					4975					4980				
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4985						4990					4995			
Val	Ala	Leu	Pro	Glu	Gly	Thr	Glu	Asp	Glu	Ala	Gly	Arg	Phe	Gly
5000						5005					5010			
Leu	His	Pro	Ala	Leu	Leu	Asp	Ala	Ala	Leu	His	Ala	Leu	Gly	Leu
5015						5020					5025			
Gly	Ser	Thr	Asp	Thr	Glu	Gly	Gly	Glu	Gly	Arg	Leu	Pro	Phe	Ser
5030						5035					5040			
Trp	Ser	Gly	Val	His	Leu	His	Ala	Val	Gly	Ala	Ser	Ala	Leu	Arg
5045						5050					5055			
Val	Arg	Leu	Thr	Thr	Ser	Arg	Ser	Gly	Glu	Val	Ala	Leu	Thr	Ile
5060						5065					5070			
Ala	Asp	Ala	Ala	Gly	Glu	Pro	Val	Ala	Thr	Val	Ala	Gly	Leu	Ala
5075						5080					5085			
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5090						5095					5100			
Thr	Arg	Asp	Ala	Leu	Phe	Arg	Val	Asp	Trp	Thr	Ala	Leu	Pro	Ala
5105						5110					5115			
Gly	Gly	Ala	Val	Gly	Ser	Leu	Asp	Asp	Trp	Met	Leu	Leu	Gly	Ala
5120						5125					5130			
Gly	Ser	Gln	Val	Tyr	Ala	Asp	Leu	Ala	Gly	Leu	Gly	Val	Ala	Val
5135						5140					5145			
Ala	Glu	Gly	Gly	Gly	Ile	Pro	Ala	Ala	Leu	Val	Val	Pro	Val	Ser
5150						5155					5160			
Glu	Pro	Asp	Ala	Glu	Ser	Ala	Ala	Gly	Gly	Val	Ala	Gly	Thr	Val
5165						5170					5175			
His	Ala	Ala	Val	Glu	Arg	Ala	Leu	Ser	Leu	Val	Gln	Glu	Trp	Leu
5180						5185					5190			
Ser	Asp	Glu	Arg	Phe	Ala	Asp	Ala	Arg	Leu	Val	Phe	Leu	Thr	Arg
5195						5200					5205			
Gly	Ala	Val	Ala	Ala	Arg	Ala	Gly	Asp	Thr	Val	Pro	Gly	Leu	Val
5210						5215					5220			
Gln	Ala	Ala	Val	Trp	Gly	Leu	Val	Arg	Ser	Ala	Gln	Ser	Glu	Asn
5225						5230					5235			
Pro	Gly	Arg	Phe	Ala	Leu	Ile	Asp	Val	Asp	Gly	Asp	Gly	Asp	Gly
5240						5245					5250			
Asp	Gly	Glu	Val	Asp	Gly	Asp	Val	Leu	Ser	Ala	Ala	Leu	Ala	Thr
5255						5260					5265			
Gly	Glu	Pro	Glu	Leu	Ala	Val	Arg	Glu	Gly	Ala	Leu	Leu	Val	Pro

5270					5275					5280				
Arg	Leu	Ala	Arg	Ala	Ala	Val	Val	Glu	Gly	Ala	Gly	Arg	Glu	Leu
5285						5290					5295			
Asp	Val	Asp	Gly	Thr	Val	Leu	Val	Thr	Gly	Ala	Ser	Gly	Thr	Leu
5300						5305					5310			
Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Val	Val	Glu	Arg	Gly	Val	Arg
5315						5320					5325			
Arg	Leu	Leu	Leu	Val	Ser	Arg	Arg	Gly	Glu	Ala	Ala	Glu	Gly	Ala
5330						5335					5340			
Ala	Glu	Leu	Gly	Ala	Glu	Leu	Thr	Glu	Leu	Gly	Ala	Asp	Val	Arg
5345						5350					5355			
Trp	Ala	Ala	Cys	Asp	Val	Ala	Asp	Arg	Asp	Ala	Leu	Glu	Ala	Val
5360						5365					5370			
Leu	Ala	Gly	Ile	Pro	Ala	Glu	Tyr	Pro	Leu	Ser	Gly	Val	Val	His
5375						5380					5385			
Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly	Val	Val	Ser	Ser	Leu	Thr	Pro
5390						5395					5400			
Glu	Arg	Leu	Ser	Ala	Val	Leu	Arg	Pro	Lys	Val	Asp	Ala	Ala	Trp
5405						5410					5415			
Asn	Leu	His	Glu	Leu	Thr	Arg	Gly	Leu	Asp	Leu	Ser	Leu	Phe	Val
5420						5425					5430			
Leu	Phe	Ser	Ser	Ala	Ala	Gly	Val	Phe	Gly	Gly	Ala	Gly	Gln	Ala
5435						5440					5445			
Asn	Tyr	Ala	Ala	Ala	Asn	Val	Phe	Leu	Asp	Ala	Leu	Ala	Gln	His
5450						5455					5460			
Arg	Arg	Ala	Gln	Gly	Leu	Ala	Ala	Thr	Ser	Leu	Ala	Trp	Gly	Leu
5465						5470					5475			
Trp	Ala	Gly	Val	Gly	Gly	Met	Gly	Gly	Glu	Leu	Thr	Glu	Ser	Asp
5480						5485					5490			
Arg	Glu	Arg	Ile	Asn	Arg	Gly	Gly	Ile	Thr	Ala	Leu	Glu	Pro	Glu
5495						5500					5505			
Thr	Gly	Leu	Ala	Leu	Phe	Asp	Ala	Ala	Gln	Arg	Thr	Thr	Asp	Ala
5510						5515					5520			
Leu	Leu	Val	Pro	Leu	Pro	Leu	Asp	Leu	Ala	Ala	Leu	Arg	Val	Gln
5525						5530					5535			
Ala	Gly	Ser	Gly	Met	Leu	Pro	Asp	Leu	Leu	Arg	Gly	Leu	Val	Arg
5540						5545					5550			
Val	Pro	Val	Arg	Arg	Ala	Ala	Gly	Gln	Gly	Ser	Ala	Ala	Gly	Gly
5555						5560					5565			
Gly	Ser	Val	Leu	Arg	Thr	Arg	Leu	Ala	Ala	Met	Pro	Ala	Asp	Glu

5570	5575	5580
Arg Asp Ala Ala Leu Leu	Asp Leu Val Arg Ala	Glu Val Ala Ala
5585	5590	5595
Val Leu Gly His Ala Ser	Thr Asp Glu Val Pro	Ala Asp Arg Ala
5600	5605	5610
Phe Lys Glu Leu Gly Phe	Asp Ser Leu Thr Ser	Val Glu Leu Arg
5615	5620	5625
Asn Arg Leu Gly Ala Thr	Thr Gly Glu Arg Leu	Ser Ala Thr Leu
5630	5635	5640
Val Phe Asp Tyr Pro Thr	Pro His Ala Leu Ala	Glu Phe Leu Arg
5645	5650	5655
Thr Glu Val Leu Gly Leu	Asp Glu Pro Thr Asp	Thr Ala Thr Thr
5660	5665	5670
Ala Pro Thr His Leu Gly	Thr Ser Leu Asp Asp	Asp Pro Ile Ala
5675	5680	5685
Ile Val Gly Met Ser Cys	Arg Tyr Pro Gly Gly	Val Glu Thr Pro
5690	5695	5700
Glu Asp Leu Trp Arg Leu	Val Val Gly Gly Gly	Asp Ala Ile Ser
5705	5710	5715
Glu Phe Pro Gln Gly Arg	Gly Trp Asp Leu Glu	Ser Leu Tyr Asp
5720	5725	5730
Pro Asp Pro Asp Gly Lys	Gly Thr Ser Tyr Thr	Arg Ser Gly Gly
5735	5740	5745
Phe Leu His Asp Ala Gly	Arg Phe Asp Pro Ala	Phe Phe Gly Ile
5750	5755	5760
Ser Pro Arg Glu Ala Val	Ala Met Asp Pro Gln	Gln Arg Leu Leu
5765	5770	5775
Leu Glu Thr Ser Trp Glu	Ala Phe Glu Arg Ala	Gly Ile Asp Pro
5780	5785	5790
Ala Ser Met Arg Gly Ser	Arg Thr Gly Val Phe	Ala Gly Ile Met
5795	5800	5805
Tyr His Asp Tyr Ala Thr	Arg Ile Thr Ser Val	Pro Asp Gly Val
5810	5815	5820
Glu Gly Tyr Leu Gly Thr	Gly Asn Ser Gly Ser	Ile Ala Ser Gly
5825	5830	5835
Arg Val Ser Tyr Ala Phe	Gly Leu Glu Gly Pro	Ala Val Thr Val
5840	5845	5850
Asp Thr Ala Cys Ser Ser	Ser Leu Val Ala Leu	His Trp Ala Ile
5855	5860	5865
Gln Ala Leu Arg Asn Gly	Glu Cys Thr Met Ala	Leu Ala Gly Gly



5870	5875	5880
Val Thr 5885	Val Met Ser Thr Pro 5890	Gly Thr Phe Thr Glu 5895
Gln Arg 5900	Gly Leu Ala Ala Asp 5905	Ser Phe Ala Ala 5910
Ala Ala 5915	Asp Gly Thr Ser Trp 5920	Gly Met Leu Leu 5925
Val Glu 5930	Arg Leu Ser Glu Ala 5935	Arg Ala Lys Gly His 5940
Ala Ile 5945	Val Arg Gly Ser Ala 5950	Ile Asn Gln Asp Gly 5955
Gly Leu 5960	Thr Ala Pro Asn Gly 5965	Pro Ser Gln Gln Arg 5970
Gln Ala 5975	Leu Ala Gly Ala Arg 5980	Leu Thr Ser Asp Gln 5985
Val Glu 5990	Ala His Gly Thr Gly 5995	Thr Thr Leu Gly Asp 6000
Ala Gln 6005	Ala Leu Leu Ala Thr 6010	Tyr Gly Arg Glu Arg 6015
Gln Pro 6020	Leu Trp Leu Gly Ser 6025	Ile Lys Ser Asn Met 6030
Gln Ala 6035	Ala Ala Gly Val Ala 6040	Gly Ile Ile Lys Met 6045
Ile Arg 6050	His Gly Val Leu Pro 6055	Lys Thr Leu His Val 6060
Thr Pro 6065	His Val Asp Trp Glu 6070	Ala Gly Ala Val Ser 6075
Glu Ser 6080	Val Pro Trp Pro Glu 6085	Thr Gly Arg Pro Arg 6090
Val Ser 6095	Ser Phe Gly Ile Ser 6100	Gly Thr Asn Ala His 6105
Glu Gln 6110	Ala Pro Glu Glu Phe 6115	Val Pro Val Arg Val 6120
Gln Thr 6125	Pro Gly Ala Gly Ser 6130	Arg Val Leu Pro Phe 6135
Ala Lys 6140	Ser Ala Gly Ala Leu 6145	Arg Gly Gln Ala Val 6150
Ala His 6155	Val Glu Ala Ser Pro 6160	Glu Val Ser Gly Ala 6165
Asp Val	Ala Tyr Ser Leu Ala	Thr Arg Arg Ala Val Phe Asp His

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Arg Ala Val Val Val Ala 6185	Gly Asp Arg Glu Glu 6190	Leu Leu Arg Ser 6195
Leu Ala Ala Val Glu Ser 6200	Glu Gly Ala Ala Ala 6205	Gly Val Thr Arg 6210
Gly Ala Val Gly Gly Gly 6215	Lys Leu Ala Phe Leu 6220	Phe Thr Gly Gln 6225
Gly Ser Gln Arg Leu Gly 6230	Met Gly Arg Glu Leu 6235	Tyr Glu Thr Tyr 6240
Pro Val Phe Ala Arg Ala 6245	Leu Asp Ala Ala Cys 6250	Ala Arg Leu Glu 6255
Leu Pro Leu Lys Asp Ala 6260	Leu Phe Gly Thr Asp 6265	Ala Gly Leu Leu 6270
Gly Glu Thr Ala Tyr Thr 6275	Gln Pro Ala Leu Phe 6280	Ala Val Glu Val 6285
Ala Leu Phe Arg Leu Leu 6290	Glu Ser Trp Gly Val 6295	Arg Pro Asp Phe 6300
Leu Ala Gly His Ser Ile 6305	Gly Glu Ile Ala Ala 6310	Ala His Val Ala 6315
Gly Val Leu Ser Leu Asp 6320	Asp Ala Cys Ala Leu 6325	Val Glu Ala Arg 6330
Gly Arg Leu Met Gln Ala 6335	Leu Pro Thr Gly Gly 6340	Val Met Ile Ala 6345
Val Gln Ala Ser Glu Ala 6350	Glu Val Leu Pro Leu 6355	Leu Thr Asp Arg 6360
Val Ser Ile Ala Ala Ile 6365	Asn Gly Pro Gln Ser 6370	Val Val Ile Ala 6375
Gly Asp Glu Ala Asp Ala 6380	Val Ala Ile Val Glu 6385	Ser Phe Ser Gly 6390
Arg Lys Ser Lys Arg Leu 6395	Thr Val Ser His Ala 6400	Phe His Ser Pro 6405
His Met Asp Gly Met Leu 6410	Ala Gly Phe Arg Lys 6415	Val Ala Glu Ser 6420
Leu Ser Tyr Glu Ala Pro 6425	Arg Ile Pro Val Val 6430	Ser Asn Leu Thr 6435
Gly Ala Leu Val Thr Asp 6440	Glu Met Gly Ser Ala 6445	Asp Phe Trp Val 6450
Arg His Val Arg Glu Ala 6455	Val Arg Phe Leu Asp 6460	Gly Ile Arg Thr 6465
Leu Glu Ala Ala Gly Val 6470	Ala Thr Tyr Val Glu 6475	Leu Gly Pro Asp 6480

6470	6475	6480
Gly Val Leu Ser Ala Met 6485	Ala Gln Asp Cys Val 6490	Thr Gly Glu Gly 6495
Ala Ala Phe Ala Pro Ala 6500	Leu Arg Lys Gly Arg 6505	Pro Glu Thr Glu 6510
Thr Ile Thr Thr Ala Leu 6515	Ala Leu Ala His Ala 6520	His Gly Thr Ser 6525
Val Asp Trp Glu Thr Tyr 6530	Phe Ala Gly Thr Gly 6535	Ala Gln Gly Val 6540
Glu Leu Pro Thr Tyr Ala 6545	Phe Gln Arg Asp Trp 6550	Tyr Trp Leu Asn 6555
Ser Ala Val Val Gln Ala 6560	Gly Pro Gly Asp Ala 6565	Ser Gly Phe Gly 6570
Leu Gly Ala Thr Asp His 6575	Pro Leu Leu Asp Ala 6580	Thr Ile Glu Leu 6585
Pro Asp Ser Asp Gly Phe 6590	Leu Phe Thr Ser Arg 6595	Leu Ser Leu Asp 6600
Thr Gln Pro Trp Leu Ala 6605	Asp His Ala Val Leu 6610	Gly Ser Val Leu 6615
Leu Pro Gly Thr Ala Phe 6620	Val Glu Ile Ala Val 6625	Arg Ala Gly Asp 6630
Gln Val Gly Cys Asp Val 6635	Leu Glu Glu Leu Thr 6640	Leu Glu Ala Pro 6645
Leu Val Val Pro Glu Arg 6650	Gly Gly Val Gln Leu 6655	Arg Leu Thr Val 6660
Ala Ala Ala Asp Glu Ser 6665	Gly Arg Arg Gly Leu 6670	Ser Leu Tyr Ser 6675
Arg Asp Glu Asp Ala Pro 6680	Ala Asp Glu Pro Trp 6685	Thr Arg His Ala 6690
Ser Gly Val Leu Ala Thr 6695	Gly Ala Ala Ala Pro 6700	Asp Phe Asp Leu 6705
Ala Ala Trp Pro Pro Ala 6710	Gly Ala Glu Pro Val 6715	Asp Ile Asp Gly 6720
Leu Tyr Glu Gly Leu Ala 6725	Ala Ala Gly Phe Asp 6730	Tyr Gly Pro Ala 6735
Phe Gln Gly Leu Arg Thr 6740	Ala Trp Leu His Gly 6745	Asp Ala Val Tyr 6750
Ala Glu Val Ser Leu Asp 6755	Glu Glu Ser Ala Glu 6760	Ser Ala Glu Trp 6765
Phe Gly Leu His Pro Ala 6770	Leu Leu Asp Ala Thr 6775	Leu His Ala Ala 6780

6770		6775		6780
Gly Leu Gly Gly Leu Val	Glu Ser Thr Gly Gln	Gly Arg Leu Pro		
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Phe Ala Trp Ser Asn Val	Ser Leu His Ala Ala	Gly Ala Ser Ala		
6800	6805	6810		
Val Arg Val Arg Leu Ala	Pro Ala Gly Arg Asp	Ala Val Ser Leu		
6815	6820	6825		
Gln Leu Ala Asp Ala Ala	Gly Ala Pro Val Ala	Ser Val Glu Ser		
6830	6835	6840		
Leu Val Leu Arg Ala Val	Ser Pro Asp Gln Ile	Gly Ala Ala Arg		
6845	6850	6855		
Gly Gly Arg His Glu Ser	Leu Phe Glu Ile Asp	Trp Ala Ala Leu		
6860	6865	6870		
Pro Leu Ala Pro Val Ser	Ala Ala Glu Gln Arg	Pro Trp Ala Leu		
6875	6880	6885		
Leu Ala Asp Asp Gly Ser	Gly His Ala Gly Leu	Glu Ala Val Gly		
6890	6895	6900		
Val Arg His Glu Ala His	Thr Gly Leu Ala Ala	Leu Ala Asp Thr		
6905	6910	6915		
Gly Arg Ala Ile Pro Glu	Val Val Cys Val Pro	Leu Ala Ala Ala		
6920	6925	6930		
Asn Ser Gln Asp Leu Ala	Gly Ala Gly Ala Val	His Ala Ala Val		
6935	6940	6945		
Glu Arg Ala Leu Gly Leu	Val Gln Glu Trp Leu	Ser Asp Glu Arg		
6950	6955	6960		
Phe Ala Asp Ala Arg Leu	Val Phe Leu Thr Arg	Gly Ala Val Ser		
6965	6970	6975		
Ala Val Pro Gly Glu Asp	Val Thr Asp Leu Val	His Ala Pro Val		
6980	6985	6990		
Trp Gly Leu Val Arg Ser	Ala Gln Ser Glu Asn	Pro Gly Arg Phe		
6995	7000	7005		
Val Leu Ala Asp Thr Asp	Gly Thr Asp Ala Ser	Tyr Arg Ala Leu		
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Thr Ala Ala Leu Ala Ser	Gly Glu Pro Glu Phe	Thr Val Arg Gly		
7025	7030	7035		
Gly Ala Val Arg Val Pro	Arg Leu Thr Arg Ser	Thr Ala Val Ala		
7040	7045	7050		
Val Glu Ala Val Pro Glu	Leu Gly Ser Asp Gly	Thr Val Leu Val		
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Thr Gly Ala Ser Gly Thr	Leu Gly Gly Leu Phe	Ala Arg His Leu		

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7085					7090						7095			
Gly	Gly	Ala	Ala	Glu	Gly	Ala	Ala	Glu	Leu	Gly	Ala	Glu	Leu	Thr
7100					7105						7110			
Glu	Leu	Gly	Ala	Asp	Val	Arg	Trp	Ala	Ala	Cys	Asp	Val	Ala	Asp
7115					7120						7125			
Arg	Asp	Ala	Leu	Glu	Ser	Val	Leu	Ala	Gly	Ile	Pro	Ala	Glu	Tyr
7130					7135						7140			
Pro	Leu	Ser	Gly	Val	Val	His	Thr	Ala	Gly	Val	Leu	Asp	Asp	Gly
7145					7150						7155			
Val	Val	Ser	Ser	Leu	Thr	Pro	Glu	Arg	Leu	Ser	Ala	Val	Leu	Arg
7160					7165						7170			
Pro	Lys	Val	Asp	Ala	Ala	Trp	Asn	Leu	His	Glu	Leu	Thr	Arg	Gly
7175					7180						7185			
Leu	Asp	Leu	Ser	Phe	Phe	Leu	Leu	Phe	Ser	Ser	Ala	Ala	Gly	Val
7190					7195						7200			
Phe	Gly	Gly	Ala	Gly	Gln	Ala	Asn	Tyr	Ala	Ala	Ala	Asn	Val	Phe
7205					7210						7215			
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7220					7225						7230			
Thr	Ser	Leu	Ala	Trp	Gly	Leu	Trp	Ala	Glu	Pro	Gly	Gly	Met	Ala
7235					7240						7245			
Gly	Ala	Leu	Asp	Ala	Asp	Asp	Val	Ser	Arg	Leu	Gly	Arg	Gly	Gly
7250					7255						7260			
Val	Ser	Gly	Leu	Ser	Ala	Gln	Glu	Gly	Val	Ala	Leu	Phe	Asp	Ala
7265					7270						7275			
Ala	Ser	Ala	Ser	Glu	Gln	Ala	Leu	Phe	Val	Pro	Val	Lys	Leu	Asp
7280					7285						7290			
Leu	Ala	Ala	Leu	Arg	Ala	Gln	Ala	Gly	Ser	Gly	Met	Leu	Pro	Pro
7295					7300						7305			
Leu	Leu	Ser	Gly	Leu	Val	Arg	Thr	Pro	Thr	Arg	Arg	Ala	Ala	Gly
7310					7315						7320			
Thr	Gly	Gly	Thr	Gly	Asp	Thr	Gly	Thr	Asp	Gly	Gly	Thr	Ala	Leu
7325					7330						7335			
Arg	Glu	Arg	Leu	Ala	Gly	Leu	Ala	Pro	Ala	Ala	Arg	Asp	Glu	Ala
7340					7345						7350			
Leu	Leu	Glu	Leu	Val	Cys	Thr	Tyr	Val	Ala	Ala	Val	Leu	Gly	Phe
7355					7360						7365			
Ala	Gly	Pro	Glu	Ala	Val	Asp	Pro	Ala	Arg	Ser	Phe	Ser	Glu	Val

7370		7375		7380
Gly Phe Asp Ser Leu Thr	Ala Val Glu Leu Arg	Asn Arg Leu Gly		
7385	7390	7395		
Ala Ala Thr Gly Val Arg	Leu Pro Ala Thr Leu	Val Phe Asp Tyr		
7400	7405	7410		
Pro Thr Pro Asp Ala Leu	Val Glu Tyr Leu Arg	Asp Glu Leu Trp		
7415	7420	7425		
Gln Asp Gly Ala Ala Ala	Val Pro Pro Leu Leu	Ala Glu Leu Asp		
7430	7435	7440		
Arg Leu Glu Lys Thr Leu	Val Ala Ser Val Pro	Asp Asp Asp Gly		
7445	7450	7455		
Arg Thr Arg Ile Thr Glu	Arg Leu Gln Ala Leu	Leu Ala Ala Trp		
7460	7465	7470		
Ser Glu Ala Gly Glu Ser	Thr Asp Thr Ala Asp	Ala Asp Val Ala		
7475	7480	7485		
Glu Ala Leu Glu Thr Ala	Thr Asp Asp Asp Leu	Phe Asp Phe Ile		
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7505	7510			

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<212> DNA

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Phe	Thr	Glu	Phe	Ser	Arg	Gln	Arg	Gly	Leu	Ser	Phe	Asp	Gly	Arg	Cys	
				245					250					255		
Lys	Ser	Phe	Ala	Asp	Ser	Ala	Asp	Gly	Thr	Gly	Trp	Ala	Glu	Gly	Ala	
			260					265					270			
Gly	Met	Leu	Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Lys	Asn	Gly	His	
		275					280					285				
Thr	Val	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Val	Asn	Gln	Asp	Gly	Ala	
	290					295					300					
Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val	Ile	
305					310				315						320	
Arg	Gln	Ala	Leu	Ala	Asp	Ala	Arg	Leu	Thr	Ala	Ala	Asp	Val	Asp	Val	
				325					330					335		
Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu	Ala	
			340					345					350			
Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Arg	Glu	His	Thr	Glu	Asp	Ser	Pro	
		355					360					365				
Leu	Trp	Leu	Gly	Ser	Val	Lys	Ser	Asn	Leu	Gly	His	Thr	Gln	Ala	Ala	
	370					375					380					
Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Met	Val	Met	Ala	Ile	Arg	His	Gly	
385					390					395					400	
Arg	Ile	Pro	Lys	Thr	Leu	His	Val	Asp	Glu	Pro	Ser	Thr	Asn	Val	Asp	
				405					410					415		
Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu	Leu	Arg	Glu	Ser	Val	Glu	Trp	Pro	
			420					425					430			
Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Ala	Ile	Ser	Ser	Phe	Gly	Ile	Ser	
		435					440					445				
Gly	Thr	Asn	Ala	His	Thr	Ile	Ile	Glu	Gln	Ala	Pro	Leu	Pro	Glu	Ala	
	450					455					460					
Glu	Thr	Glu	Thr	Glu	Pro	Thr	Gly	Asp	Glu	Thr	Asp	Gly	Ser	Glu	Ser	
465					470					475					480	
Thr	Ala	Gly	Ala	Glu	Gly	Thr	Glu	Gly	Thr	Glu	Gly	Ala	Gly	Val	Arg	
				485					490					495		
Pro	Val	Ser	Val	Pro	Pro	Val	Leu	Pro	Trp	Pro	Val	Ser	Ala	Arg	Thr	
			500					505					510			
Glu	Glu	Ala	Leu	His	Ala	Gln	Ala	Glu	Arg	Leu	Leu	Ala	His	Val	Arg	
		515					520					525				
Thr	Asn	Pro	Asp	Gln	Ala	Pro	Val	Gly	Val	Ala	Leu	Ser	Leu	Ala	Thr	
	530					535					540					
Gly	Arg	Ala	Ala	Leu	Glu	His	Arg	Ala	Val	Val	Val	Ala	Thr	Asp	Arg	
545					550					555					560	

Glu	Thr	Ala	Leu	Ala	Asp	Leu	Ala	Ala	Leu	Ala	Ser	Gly	Glu	Thr	Ser	565	570	575
Ala	Arg	Val	Val	Leu	Gly	Glu	Pro	Gly	Ala	Arg	Gly	Lys	Thr	Ala	Phe	580	585	590
Leu	Phe	Thr	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	595	600	605
Tyr	Glu	Glu	Tyr	Pro	Val	Phe	Ala	Asp	Ala	Leu	Asp	Ala	Val	Cys	Ala	610	615	620
Arg	Leu	Glu	Leu	Pro	Leu	Lys	Asp	Val	Leu	Phe	Gly	Ala	Asp	Ala	Arg	625	630	635
Leu	Leu	Asp	Glu	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	645	650	655
Val	Ala	Leu	Phe	Arg	Leu	Val	Glu	Ser	Trp	Gly	Leu	Lys	Pro	Asp	Phe	660	665	670
Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val	Ala	Gly	675	680	685
Val	Phe	Ser	Leu	Glu	Asp	Ala	Cys	Ala	Leu	Val	Ser	Ala	Arg	Gly	Arg	690	695	700
Leu	Met	Gly	Ala	Leu	Pro	Ala	Gly	Gly	Val	Met	Ile	Ala	Val	Gln	Ala	705	710	715
Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	Ala	Arg	Val	Ser	Ile	Ala	725	730	735
Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	740	745	750
Ala	Val	Ala	Ile	Val	Glu	Ser	Phe	Thr	Gly	Arg	Lys	Ser	Lys	Arg	Leu	755	760	765
Thr	Val	Ser	His	Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met	Leu	Glu	770	775	780
Asp	Phe	Arg	Val	Val	Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	785	790	795
Pro	Val	Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Ser	Asp	Glu	Met	Gly	805	810	815
Ser	Ala	Asp	Phe	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	820	825	830
Asp	Gly	Ile	Arg	Ala	Leu	Glu	Ala	Ala	Gly	Val	Thr	Thr	Tyr	Val	Glu	835	840	845
Leu	Gly	Pro	Asp	Gly	Val	Leu	Ser	Ala	Met	Ala	Gln	Ala	Cys	Val	Thr	850	855	860
Gly	Glu	Asn	Ser	Val	Phe	Val	Pro	Val	Leu	Arg	Ser	Gly	Arg	Ser	Glu	865	870	875

Ala	Glu	Ser	Val	Thr	Thr	Ala	Leu	Ala	Gln	Ala	His	Val	Arg	Gly	Ile	885	890	895
Ala	Val	Asp	Trp	Gln	Ala	Tyr	Phe	Ala	Gly	Thr	Gly	Ala	Glu	Arg	Val	900	905	910
Asp	Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Asp	His	Tyr	Trp	Leu	Asp	Ala	915	920	925
Gly	Thr	Leu	Gly	Gly	Asp	Val	Thr	Thr	Ala	Gly	Leu	Arg	Ser	Ala	Asp	930	935	940
His	Pro	Leu	Leu	Gly	Ala	Ser	Val	Ala	Leu	Ala	Asp	Ala	Glu	Gly	Leu	945	950	955
Leu	Leu	Thr	Gly	Arg	Leu	Ser	Leu	Asp	Thr	His	Pro	Trp	Leu	Ala	Asp	965	970	975
His	Ala	Val	Ala	Gly	Thr	Val	Leu	Leu	Pro	Gly	Thr	Ala	Phe	Val	Glu	980	985	990
Leu	Ala	Leu	Arg	Ala	Gly	Asp	Gln	Val	Gly	Cys	Asp	Leu	Ile	Asp	Glu	995	1000	1005
Leu	Thr	Leu	Ala	Ala	Pro	Leu	Val	Leu	Pro	Glu	Gln	Gly	Gly	Val		1010	1015	1020
Glu	Leu	Gln	Ile	Thr	Val	Ala	Ala	Pro	Asp	Glu	Ser	Gly	Arg	Arg		1025	1030	1035
Ser	Val	Ala	Phe	His	Ser	Arg	Ala	Asp	Ser	Ala	Ala	Asp	Asp	Glu		1040	1045	1050
Ala	Trp	Val	Arg	His	Ala	Thr	Ala	Val	Leu	Ala	Glu	Gly	Ala	Asp		1055	1060	1065
Thr	Pro	Val	Phe	Asp	Phe	Gly	Val	Trp	Pro	Pro	Thr	Gly	Ala	Glu		1070	1075	1080
Ser	Val	Pro	Val	Asp	Gly	Leu	Tyr	Glu	Gly	Leu	Ala	His	Ser	Gly		1085	1090	1095
Phe	Gly	Tyr	Gly	Pro	Val	Phe	Gln	Gly	Leu	Arg	Ala	Ala	Trp	Arg		1100	1105	1110
Gln	Gly	Glu	Asp	Val	Phe	Ala	Glu	Val	Ser	Leu	Gly	Asp	Gly	Val		1115	1120	1125
Glu	Pro	Gly	Ala	Ala	His	Phe	Thr	Val	His	Pro	Ala	Leu	Leu	Asp		1130	1135	1140
Ser	Ala	Leu	His	Ala	Ile	Asn	Leu	Gly	Thr	Leu	Val	Glu	Asp	Thr		1145	1150	1155
Gly	Gln	Gly	Arg	Leu	Pro	Phe	Ala	Trp	Ser	Gly	Val	Ala	Val	His		1160	1165	1170
Ala	Val	Gly	Ala	Asp	Thr	Leu	Arg	Val	Arg	Leu	Ser	Arg	Ala	Gly		1175	1180	1185

Gln	Asp	Ala	Val	Ala	Leu	Glu	Ile	Ala	Asp	Ala	Asp	Gly	Ala	Pro
1190						1195					1200			
Val	Ala	Ser	Val	Arg	Ser	Leu	Ala	Leu	Arg	Ala	Phe	Ser	Pro	Asp
1205						1210					1215			
Gln	Leu	Thr	Gly	Pro	Asp	Gly	Ala	Gly	His	Gly	Asp	Ala	Leu	Phe
1220						1225					1230			
Arg	Val	Asp	Trp	Ala	Ala	Leu	Pro	Ala	Gly	Gly	Ala	Val	Gly	Ser
1235						1240					1245			
Leu	Asp	Asp	Trp	Met	Leu	Leu	Gly	Ala	Gly	Ser	Gln	Val	Tyr	Ala
1250						1255					1260			
Asp	Leu	Ala	Gly	Leu	Gly	Val	Ala	Val	Ala	Glu	Gly	Gly	Gly	Ile
1265						1270					1275			
Pro	Ala	Ala	Leu	Val	Val	Pro	Val	Ser	Glu	Pro	Asp	Ala	Glu	Ser
1280						1285					1290			
Ala	Ala	Gly	Gly	Val	Ala	Gly	Ala	Val	His	Ala	Ala	Val	Glu	Arg
1295						1300					1305			
Ala	Leu	Gly	Leu	Val	Gln	Glu	Trp	Leu	Ser	Asp	Glu	Arg	Phe	Ala
1310						1315					1320			
Asp	Ala	Arg	Leu	Val	Phe	Leu	Thr	Arg	Gly	Ala	Ala	Ala	Ala	Arg
1325						1330					1335			
Ala	Gly	Asp	Thr	Val	Pro	Gly	Leu	Val	Gln	Ala	Ala	Val	Arg	Gly
1340						1345					1350			
Leu	Val	Arg	Ser	Ala	Gln	Ser	Glu	Asn	Pro	Gly	Arg	Phe	Ala	Leu
1355						1360					1365			
Ile	Asp	Val	Asp	Gly	Asp	Gly	Glu	Val	Asp	Ala	Glu	Val	Leu	Ser
1370						1375					1380			
Ala	Ala	Leu	Ala	Thr	Gly	Glu	Pro	Glu	Leu	Ala	Val	Arg	Glu	Ala
1385						1390					1395			
Ala	Leu	Leu	Val	Pro	Arg	Leu	Ala	Arg	Ala	Ala	Val	Ala	Val	Glu
1400						1405					1410			
Pro	Ala	Pro	Glu	Leu	Gly	Ser	Asp	Gly	Thr	Val	Leu	Val	Thr	Gly
1415						1420					1425			
Ala	Ser	Gly	Thr	Leu	Gly	Gly	Leu	Phe	Ala	Arg	His	Leu	Val	Val
1430						1435					1440			
Glu	Arg	Gly	Val	Arg	Arg	Leu	Leu	Leu	Val	Ser	Arg	Arg	Gly	Glu
1445						1450					1455			
Ala	Ala	Glu	Gly	Ala	Ala	Glu	Leu	Gly	Ala	Glu	Leu	Thr	Gly	Leu
1460						1465					1470			
Gly	Ala	Asp	Val	Arg	Trp	Ala	Ala	Cys	Asp	Val	Ala	Asp	Arg	Glu
1475						1480					1485			

Ala Leu	Glu Ser Val Leu	Ala Gly Ile Pro Ala	Glu Tyr Pro Leu
1490		1495	1500
Ser Gly	Val Val His Thr	Ala Gly Val Leu Asp	Asp Gly Val Val
1505		1510	1515
Ser Ser	Leu Thr Ala Glu	Arg Val Ser Ala Val	Leu Arg Pro Lys
1520		1525	1530
Val Asp	Ala Ala Trp Asn	Leu His Glu Leu Thr	Arg Gly Leu Asp
1535		1540	1545
Leu Ser	Leu Phe Val Leu	Phe Ser Ser Ala Ala	Gly Val Phe Gly
1550		1555	1560
Gly Ala	Gly Gln Ala Asn	Tyr Ala Ala Ala Asn	Val Phe Leu Asp
1565		1570	1575
Ala Leu	Ala Gln His Arg	Arg Ala Gln Gly Leu	Ala Ala Thr Ser
1580		1585	1590
Leu Ala	Trp Gly Leu Trp	Asp Glu Pro Gly Gly	Met Ala Gly Ala
1595		1600	1605
Leu Asp	Ala Asp Asp Val	Ser Arg Leu Gly Arg	Gly Gly Val Ser
1610		1615	1620
Gly Leu	Ser Ala Gly Glu	Gly Val Ala Leu Phe	Asp Ala Ala Ser
1625		1630	1635
Ala Ser	Glu Gln Ala Leu	Phe Val Pro Val Lys	Leu Asp Leu Ala
1640		1645	1650
Ala Leu	Arg Ala Gln Ala	Gly Ser Gly Met Leu	Pro Pro Leu Leu
1655		1660	1665
Ser Gly	Leu Val Arg Thr	Pro Thr Arg Arg Ala	Ala Arg Gly Gly
1670		1675	1680
Ser Ala	Ala Gly Gly Thr	Phe Ala Arg Lys Leu	Ala Gly Leu Ala
1685		1690	1695
Val Asp	Gln Arg Ser Ala	Ala Val Met Glu Leu	Val Arg Ala Gln
1700		1705	1710
Val Ala	Ala Val Leu Gly	Leu Ala Gly Pro Glu	Ala Val Asp Pro
1715		1720	1725
Ala Arg	Ser Phe Ser Glu	Val Gly Phe Asp Ser	Leu Thr Ala Val
1730		1735	1740
Glu Leu	Arg Asn Arg Leu	Gly Ala Ala Thr Gly	Val Arg Leu Pro
1745		1750	1755
Ala Thr	Leu Val Phe Asp	Tyr Pro Thr Ser Leu	Ala Leu Ala Asp
1760		1765	1770
Phe Leu	Gly Gly Glu Leu	Leu Gly Gly Gln Glu	Ala Ala Ala Ala
1775		1780	1785



Pro Thr	Ala Phe Thr Ala	Arg	Asp Asp Glu Pro	Ile	Ala Ile Val	
1790		1795		1800		
Ala Met	Ser Cys Arg Phe	Pro	Gly Gly Val Arg	Ser	Pro Glu Asp	
1805		1810		1815		
Leu Trp	Gly Leu Val Leu	Asp	Gly Arg Asp Ala	Ile	Ser Asp Met	
1820		1825		1830		
Pro Asp	Asp Arg Gly Trp	Asp	Val Glu Gly Leu	Phe	Asp Pro Asp	
1835		1840		1845		
Pro Asp	Arg Pro Gly Thr	Ser	Tyr Ser Arg Ala	Gly	Gly Phe Leu	
1850		1855		1860		
His Asp	Ala His His Phe	Asp	Pro Thr Phe Phe	Gly	Ile Ser Pro	
1865		1870		1875		
Arg Glu	Ala Leu Ala Thr	Asp	Pro Gln Gln Arg	Leu	Leu Leu Glu	
1880		1885		1890		
Thr Ser	Trp Glu Ala Phe	Glu	Arg Ala Gly Ile	Asp	Pro Ala Thr	
1895		1900		1905		
Val Arg	Gly Ser Arg Thr	Gly	Val Phe Ala Gly	Val	Met Tyr Asn	
1910		1915		1920		
Asp Tyr	Gly Thr Leu Leu	His	Arg Ala Pro Glu	Gly	Leu Glu Gly	
1925		1930		1935		
Tyr Met	Gly Thr Ser Ser	Ser	Gly Ser Val Ala	Ser	Gly Arg Val	
1940		1945		1950		
Ser Tyr	Thr Phe Gly Leu	Glu	Gly Pro Ala Val	Thr	Val Asp Thr	
1955		1960		1965		
Ala Cys	Ser Ser Ser Leu	Val	Thr Leu His Leu	Ala	Val Gln Ala	
1970		1975		1980		
Leu Arg	Asn Gly Glu Cys	Asp	Leu Ala Leu Ala	Gly	Gly Val Thr	
1985		1990		1995		
Val Met	Ala Thr Pro Gly	Thr	Phe Val Ala Phe	Ser	Arg Gln Arg	
2000		2005		2010		
Gly Leu	Ala Ser Asp Gly	Arg	Cys Lys Pro Phe	Ala	Ala Ala Ala	
2015		2020		2025		
Asp Gly	Thr Ala Trp Gly	Glu	Gly Val Gly Met	Leu	Leu Val Glu	
2030		2035		2040		
Arg Leu	Ser Asp Ala Arg	Ala	Lys Gly His Pro	Val	Leu Ala Val	
2045		2050		2055		
Val Arg	Gly Ser Ala Ile	Asn	Gln Asp Gly Ala	Ser	Asn Gly Leu	
2060		2065		2070		
Thr Ala	Pro Asn Gly Pro	Ser	Gln Gln Arg Val	Ile	Arg Gln Ala	
2075		2080		2085		

Leu	Ala	Ser	Ala	Gly	Leu	Ser	Ala	Ala	Asp	Val	Asp	Val	Val	Glu
2090						2095					2100			
Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu	Ala	Gln
2105						2110					2115			
Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Glu	His	Thr	Asp	Asp	Ser	Pro
2120						2125					2130			
Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Phe	Gly	His	Thr	Gln	Ala
2135						2140					2145			
Ala	Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Met	Val	Gln	Ala	Met	His
2150						2155					2160			
His	Gly	Val	Val	Pro	Lys	Thr	Leu	His	Val	Asp	Glu	Pro	Ser	Pro
2165						2170					2175			
His	Val	Asp	Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu	Leu	Thr	Glu	Gln
2180						2185					2190			
Met	Ala	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Ala	Ile	Ser
2195						2200					2205			
Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala	His	Thr	Ile	Ile	Glu	Gln
2210						2215					2220			
Ala	Pro	Glu	Glu	Phe	Ala	Pro	Val	Arg	Pro	Val	Arg	Val	Ile	Glu
2225						2230					2235			
Pro	Glu	Ala	Val	Gly	Ala	Gly	Ser	Arg	Val	Leu	Pro	Phe	Val	Leu
2240						2245					2250			
Ser	Ala	Lys	Ser	Ala	Gly	Ala	Leu	Arg	Gly	Gln	Ala	Val	Arg	Leu
2255						2260					2265			
Lys	Ala	His	Val	Glu	Ala	Ser	Pro	Glu	Val	Ser	Gly	Ala	Gly	Ala
2270						2275					2280			
Ala	Asp	Val	Ala	Tyr	Ser	Leu	Ala	Thr	Arg	Arg	Ala	Val	Phe	Asp
2285						2290					2295			
His	Arg	Ala	Val	Val	Val	Ala	Gly	Asp	Arg	Glu	Glu	Leu	Leu	Arg
2300						2305					2310			
Ala	Leu	Ala	Ala	Val	Glu	Ser	Glu	Gly	Thr	Ala	Ala	Gly	Val	Thr
2315						2320					2325			
Arg	Gly	Thr	Ala	Gly	Gly	Gly	Lys	Leu	Ala	Phe	Leu	Phe	Thr	Gly
2330						2335					2340			
Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	Thr
2345						2350					2355			
Tyr	Pro	Val	Phe	Ala	Arg	Ala	Leu	Asp	Ala	Ala	Cys	Ala	Gly	Leu
2360						2365					2370			
Glu	Leu	Pro	Leu	Lys	Asp	Ala	Leu	Phe	Gly	Ala	Asp	Ala	Gly	Leu
2375						2380					2385			

Leu	Asp	Glu	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu
2390						2395					2400			
Val	Ala	Leu	Phe	Arg	Leu	Leu	Glu	Ser	Trp	Gly	Val	Arg	Pro	Asp
2405						2410					2415			
Phe	Leu	Ala	Gly	His	Ser	Ile	Gly	Glu	Ile	Ala	Ala	Ala	His	Val
2420						2425					2430			
Ala	Gly	Val	Leu	Ser	Leu	Asp	Asp	Ala	Cys	Ala	Leu	Val	Ala	Ala
2435						2440					2445			
Arg	Gly	Arg	Leu	Met	Gln	Ala	Leu	Pro	Thr	Gly	Gly	Val	Met	Ile
2450						2455					2460			
Ala	Val	Gln	Ala	Ser	Glu	Asp	Glu	Val	Leu	Pro	Leu	Leu	Thr	Asp
2465						2470					2475			
Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln	Ser	Val	Val	Ile
2480						2485					2490			
Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Ile	Val	Glu	Ser	Phe	Ser
2495						2500					2505			
Gly	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His	Ala	Phe	His	Ser
2510						2515					2520			
Pro	His	Met	Asp	Gly	Met	Leu	Ala	Gly	Phe	Arg	Lys	Val	Ala	Glu
2525						2530					2535			
Ser	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Val	Val	Ser	Asn	Leu
2540						2545					2550			
Thr	Gly	Ala	Leu	Val	Thr	Asp	Glu	Met	Gly	Ser	Ala	Asp	Phe	Trp
2555						2560					2565			
Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp	Gly	Ile	Arg
2570						2575					2580			
Ala	Leu	Glu	Ala	Ala	Gly	Val	Thr	Ala	Tyr	Val	Glu	Leu	Gly	Pro
2585						2590					2595			
Asp	Gly	Val	Leu	Ser	Ala	Leu	Ala	Gln	Glu	Cys	Val	Thr	Gly	Glu
2600						2605					2610			
Gly	Ala	Ala	Phe	Ala	Pro	Ala	Leu	Arg	Lys	Gly	Arg	Pro	Glu	Ala
2615						2620					2625			
Glu	Thr	Ile	Thr	Thr	Ala	Leu	Ala	Leu	Ala	His	Asn	His	Gly	Thr
2630						2635					2640			
Ser	Val	Asp	Trp	Glu	Thr	Tyr	Phe	Ser	Gly	Thr	Gly	Ala	Gln	Arg
2645						2650					2655			
Val	Asp	Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Glu	Arg	Tyr	Trp	Ile
2660						2665					2670			
Asp	Val	Pro	Val	His	Ser	Val	Gly	Asp	Val	Ala	Ser	Ala	Gly	Leu
2675						2680					2685			

Gly	Ala	Ala	Glu	His	Pro	Leu	Leu	Gly	Ala	Ala	Val	Glu	Leu	Pro
2690						2695					2700			
Asp	Ser	Asp	Gly	Leu	Leu	Leu	Thr	Gly	Arg	Leu	Ser	Leu	Leu	Ser
2705						2710					2715			
His	Pro	Trp	Leu	Ala	Asp	His	Ala	Val	Ala	Gly	Thr	Val	Leu	Leu
2720						2725					2730			
Pro	Gly	Thr	Ala	Phe	Val	Glu	Leu	Ala	Leu	His	Ala	Gly	Gln	Arg
2735						2740					2745			
Val	Gly	Ser	Gly	Leu	Leu	Glu	Glu	Leu	Thr	Leu	Glu	Ala	Pro	Leu
2750						2755					2760			
Val	Leu	Pro	Glu	Arg	Gly	Ala	Leu	Gln	Leu	Arg	Val	Ser	Val	Ala
2765						2770					2775			
Ala	Pro	Asp	Glu	Ala	Gly	Arg	Arg	Ala	Leu	His	Val	His	Ser	Arg
2780						2785					2790			
Pro	Glu	Asp	Leu	Gly	Gly	Glu	Asp	Arg	Thr	Gly	His	Glu	Val	Pro
2795						2800					2805			
Trp	Thr	Arg	His	Ala	Gly	Gly	Val	Leu	Ala	Ala	Pro	Glu	Ala	Ala
2810						2815					2820			
Gly	Ala	Ala	Pro	Glu	Glu	Ser	Gly	Leu	Asp	Val	Trp	Pro	Pro	Ala
2825						2830					2835			
Asp	Ala	Glu	Pro	Leu	Asp	Ala	Gly	Asp	Leu	Tyr	Asp	Arg	Phe	Ala
2840						2845					2850			
Glu	Gly	Gly	Phe	Ala	Tyr	Gly	Pro	Val	Phe	Arg	Asn	Leu	Arg	Ala
2855						2860					2865			
Ala	Trp	Arg	Arg	Gly	Asp	Glu	Leu	Phe	Ala	Glu	Leu	Leu	Leu	Pro
2870						2875					2880			
Glu	Gly	Gln	Leu	Ala	Gln	Ala	Gly	His	Phe	Gly	Val	His	Pro	Ala
2885						2890					2895			
Leu	Leu	Asp	Ala	Gly	Leu	His	Gly	Leu	Ala	Leu	Gly	Ser	Phe	His
2900						2905					2910			
Asp	Gly	Ala	Asp	Glu	Asp	Ala	Arg	Ile	Arg	Leu	Pro	Phe	Ser	Phe
2915						2920					2925			
Ser	Gly	Val	Ala	Leu	His	Ser	Val	Gly	Ala	Gly	Ser	Leu	Arg	Val
2930						2935					2940			
Arg	Leu	Ala	Pro	Ala	Gly	Ser	Gly	Ala	Val	Ser	Leu	Ala	Ala	Phe
2945						2950					2955			
Asp	Glu	Gln	Gly	Ala	Pro	Val	Val	Ser	Val	Glu	Ser	Leu	Leu	Leu
2960						2965					2970			
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<210> 39  
 <211> 338  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 39

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Gly	Phe	Asn	Ser	Gly	Phe	Asp	Ser	Glu	Gln	Thr	Pro	Ser	Thr	Glu	Thr
		20						25					30		
Ala	Ile	Val	Phe	Pro	Gly	Met	Gly	Pro	Ser	Ser	Phe	Ala	Glu	Val	Gly
		35					40					45			
Lys	Phe	Leu	Leu	Leu	Asp	Pro	Tyr	Ala	Arg	Arg	Arg	Leu	Ala	Glu	Ala
	50					55					60				
Asp	Glu	Ala	Leu	Gly	Tyr	Ser	Val	Phe	Asp	Arg	Phe	Arg	Thr	Ser	Glu
65					70				75					80	
Asp	Asp	Tyr	Ser	Val	Tyr	Ser	Gln	Ile	Ala	Phe	Leu	Val	Asn	Ser	Met
			85					90					95		
Ala	Met	Ala	Asp	Arg	Ala	Val	Asp	Ala	Leu	Gly	Ile	Ser	Pro	Thr	Val
		100						105					110		

Cys Ala Gly Pro Ser Phe Gly Gln Lys Ala Ala Ser Ala Phe Val Gly  
 115 120 125  
 Ser Leu Pro Phe Ala Asp Val Val Arg Leu Thr Ala Glu Leu Ala Arg  
 130 135 140  
 Cys Glu Glu Glu Tyr Phe Ala Asp Ala Tyr Gln Asp Val Val Thr His  
 145 150 155 160  
 Cys Phe Val Arg Thr Pro Gln Asp Arg Leu Asp Glu Ile Leu Ala Gly  
 165 170 175  
 Phe Asp Asp Arg Gly Ala Trp Tyr Asp Ile Ser Gly Arg Leu Asp Ala  
 180 185 190  
 Ala Phe His Met Val Ser Val Gln Glu Lys Glu Leu Asp Gly Leu Lys  
 195 200 205  
 Ala Gly Ile Ser Ala Val Gly Gly Tyr Ser Met Tyr Ser Met Arg Pro  
 210 215 220  
 Pro Val His Ala Ala Ala Phe Ser Ala Leu Arg Arg Lys Ala Glu Glu  
 225 230 235 240  
 Glu Val Phe Ala Ala Tyr Glu Leu Ala Asp Pro Thr Leu Pro Val Val  
 245 250 255  
 Asn Asp Gln Asp Gly Gly Val Val Arg Asp Ala Ala Gly Met Arg Thr  
 260 265 270  
 Met Met Leu Asp Thr Phe Asp Arg Pro Val His Trp Pro Gly Val Val  
 275 280 285  
 Glu Ser Leu Lys Gly Leu Gly Val Gly Thr Val Cys Val Thr Gly Pro  
 290 295 300  
 Asp Asn Leu Phe His Arg Leu Asp Leu Thr Lys Asp Ser Phe Glu Val  
 305 310 315 320  
 Val Thr Val Gly Leu Pro Lys Lys Arg Ser Arg Glu Arg Glu Lys Arg  
 325 330 335  
 Val Ala

<210> 40  
 <211> 1017  
 <212> DNA  
 <213> Streptomyces aizunensis  
  
 <400> 40  
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 ccctcgctct tcgcggaggt cggaagttc ctgctgctcg acccttacgc gcgccggcgc 180  
 ctcgaggagg cagacgaggc gctcgatat tcggtgttcg accgtttccg cacctccgag 240  
 gacgactact cggctctatt gcagatcgcc ttcttggtga attcgatggc tatggccgac 300

cggggcgggtgg acgcgcctcgg catctctctccc accgtctcgcg ccggcccgag ttctggccag 360  
 aaggccgcct cgcgtttcgt cgggtcgcgtg cccttcgcgg acgtcgtccg gctcaccgcg 420  
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 tgcttcgtcc gcaccccgca ggaccggctg gacgagatcc tggcgggctt cgacgaccgc 540  
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<210> 41  
 <211> 283  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 41

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 35 40 45  
 Pro Phe Leu Ala Gln Val Leu Val Glu Pro Phe Phe Ile Leu Phe Val  
 50 55 60  
 Phe Gly Lys Val Leu Gly Glu Leu Gly Tyr Thr Gly Gly Gly Phe Gln  
 65 70 75 80  
 Gln Ile Leu Leu Pro Gly Val Val Ala Leu Asn Ser Phe Leu Val Ser  
 85 90 95  
 Leu Gln Asn Thr Ala Leu Pro Leu Val Ile Asp Phe Ser Trp Thr Lys  
 100 105 110  
 Glu Ile Glu Asp Arg Leu Leu Ala Pro Ile Pro Thr Ser Leu Val Ala  
 115 120 125  
 Val Glu Lys Leu Val Phe Gly Ala Leu Arg Gly Ile Ile Ala Ser Leu  
 130 135 140



Val Met Ile Pro Val Gly Phe Leu Ile Leu Asp Asp Val Ser Trp Pro  
 145 150 155 160  
 Met Asp Ser Phe Leu Pro Thr Leu Gly Val Leu Leu Thr Gly Ala Leu  
 165 170 175  
 Ala Gly Ser Thr Val Gly Leu Thr Ile Gly Thr Leu Ala Pro Pro Arg  
 180 185 190  
 His Ile Ser Val Ile Phe Ala Val Thr Leu Thr Pro Leu Met Phe Thr  
 195 200 205  
 Gly Cys Thr Gln Phe Pro Trp His Ser Leu Ala Asp Ile Arg Trp Phe  
 210 215 220  
 Gln Val Leu Cys Ala Ile Asn Pro Leu Thr Tyr Val Ser Glu Gly Ile  
 225 230 235 240  
 Arg Ala Leu Leu Leu Pro Pro Gly Gly Pro Gly Ser Ile Pro Leu Trp  
 245 250 255  
 Ile Asp Leu Leu Ala Leu Ser Gly Ala Ile Val Val Phe Gly Leu Ile  
 260 265 270  
 Gly Ile Lys Gly Phe His Arg Arg Ala Gln Asp  
 275 280

<210> 42  
 <211> 852  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 42  
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 ttcgtcaccg gccgcgaact gggcccgttc ctcgcccagg tgctcgtgga accgttcttc 180  
 atcctgttcg tcttcggcaa ggtcctcggc gaactcgggt acaccggcgg cgggttccag 240  
 cagatcctgc tcccgggcgt ggtcgcgctc aacagcttcc tggtcagcct gcagaacacc 300  
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<210> 43  
 <211> 329  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 43

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Arg	Asp	Arg	Pro	Ala	Val	Asp	Asp	Leu	Ser	Phe	Ser	Val	Arg	Arg	Gly	20	25	30	
Glu	Val	Phe	Gly	Phe	Leu	Gly	Pro	Asn	Gly	Ala	Gly	Lys	Thr	Thr	Thr	35	40	45	
Ile	Gly	Ile	Leu	Thr	Thr	Arg	Val	Ala	Pro	Thr	Ala	Gly	Arg	Ala	Phe	50	55	60	
Val	Gln	Gly	Val	Asp	Val	Val	Ala	His	Pro	Ala	Gln	Ala	Arg	Arg	Ala	65	70	75	80
Phe	Ala	Val	Val	Pro	Gln	Arg	Asn	Asn	Leu	Asp	Arg	Ser	Leu	Thr	Leu	85	90	95	
Arg	Gln	Asn	Leu	Thr	Phe	His	Ala	Gly	Tyr	His	Gly	Met	Ser	Arg	Ser	100	105	110	
Glu	Arg	Gly	Arg	Leu	Ala	Asp	Glu	Cys	Leu	Glu	Trp	Val	Gly	Leu	Ala	115	120	125	
Asp	Arg	Gly	Lys	Ala	Arg	Gly	Asp	Glu	Leu	Ser	Gly	Gly	Gln	Ala	Gln	130	135	140	
Arg	Val	Met	Ile	Ala	Arg	Ala	Leu	Met	His	Arg	Pro	Asp	Val	Leu	Phe	145	150	155	160
Leu	Asp	Glu	Pro	Ala	Thr	Gly	Leu	Asp	Pro	Gln	Ala	Arg	Leu	Phe	Ile	165	170	175	
His	Glu	Arg	Val	Ala	Glu	Leu	Ser	Lys	Arg	Gly	Val	Thr	Thr	Val	Leu	180	185	190	
Thr	Thr	His	Asp	Met	Asp	Glu	Ala	Ala	Lys	Leu	Cys	Asp	Arg	Val	Gly	195	200	205	
Ile	Val	Asp	His	Gly	Arg	Leu	Leu	Ala	Leu	Asp	Thr	Pro	Gln	Ala	Leu	210	215	220	
Thr	Arg	Ser	Leu	Ser	Ser	Thr	Ala	Leu	Thr	Leu	Thr	Val	Gln	Pro	Ala	225	230	235	240
Gly	His	Asp	Ala	Glu	Ser	Val	Val	Arg	Leu	Leu	Glu	Arg	Ile	Glu	Thr	245	250	255	
Val	Glu	Arg	Val	Glu	Leu	Ala	His	Gln	Glu	His	Ala	Lys	Glu	Gln	Gly				

	260		265		270										
Gly	Ala	Pro	Ala	Pro	Val	Arg	Leu	Arg	Leu	Tyr	Ser	Asp	Ala	Pro	Ser
	275						280					285			
Gly	Ala	Val	Leu	Pro	Thr	Ala	Ile	Thr	Ala	Leu	Thr	Glu	Ala	Ser	His
	290					295					300				
Asp	Ile	Lys	Asp	Val	Ser	Val	Gly	Thr	Ala	Thr	Leu	Glu	Asp	Val	Phe
305					310					315					320
Ile	Lys	Leu	Thr	Gly	Arg	Glu	Leu	Arg							
				325											

<210> 44  
 <211> 990  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 44  
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 aacggggcgg gcaagacgac gaccatcggc atcctcacca cccgctgggc cccacggcg 180  
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 gccgagctga gcaagcgcg ggtgaccacc gtgctgacca cgcacgacat ggacgaagcc 600  
 gccaaactct gcgaccgct cggcatcgtc gaccacggcc gactgctggc cctcgacacc 660  
 ccgcaggcgc tgaccggag cctgagcagc accgccctca ccctaccgt ccagcccgcg 720  
 gggcacgacg ccgagagcgt cgtacgcctg ctggagcgga tcgagacggt cgagcgggtc 780  
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 cgctctaca gcgacgcgc gtccggcgcg gtgctgccga ccgccatcac ggccctgacg 900  
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<210> 45  
 <211> 317  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 45

Val	Ser	Ala	Gly	Phe	Gly	Val	Glu	Pro	Gly	Ser	Leu	Arg	Trp	Met	Val	1	5	10	15
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Ala	Arg	Gly	Ala	Asp	Pro	Val	Gly	Val	Gly	Ser	Ala	Asp	Leu	Asp	Leu	35	40	45	
Thr	Asp	Pro	Gln	Ala	Val	Ala	Ala	Ala	Val	Ala	Asp	Gly	Gly	Pro	Asp	50	55	60	
Val	Val	Val	Asn	Cys	Ala	Ala	Trp	Thr	Ala	Val	Asp	Leu	Ala	Glu	Thr	65	70	75	80
Glu	Glu	Glu	Ala	Ala	Leu	Ala	Val	Asn	Gly	Thr	Gly	Ala	Gly	His	Leu	85	90	95	
Ala	Arg	Ala	Cys	Ala	Ala	Thr	Gly	Ser	Arg	Leu	Leu	His	Val	Ser	Thr	100	105	110	
Asp	Tyr	Val	Phe	Arg	Gly	Ala	Pro	Ala	Asp	Ala	Gly	His	Pro	Tyr	Ala	115	120	125	
Glu	Asp	Ala	Glu	Pro	Asp	Pro	Ala	Thr	Ala	Tyr	Gly	Arg	Thr	Lys	Leu	130	135	140	
Val	Gly	Glu	Arg	Ala	Val	Leu	Ala	Glu	Leu	Pro	Ala	Thr	Ala	Ala	Val	145	150	155	160
Val	Arg	Thr	Ser	Trp	Leu	Tyr	Gly	Arg	Asp	Asn	Gly	Gly	Phe	Val	His	165	170	175	
Thr	Met	Ala	Arg	Leu	Ala	Arg	Glu	Pro	Gly	Arg	Thr	Val	Asp	Val	Val	180	185	190	
Asp	Asp	Gln	His	Gly	Gln	Pro	Ser	Trp	Thr	Pro	Asp	Val	Ala	Ala	Arg	195	200	205	
Ile	Ile	Glu	Leu	Ala	Ala	Leu	Pro	Ala	Asp	Arg	Ala	His	Gly	Val	Phe	210	215	220	
His	Ala	Thr	Gly	Gly	Gly	Arg	Thr	Thr	Trp	Tyr	Asp	Leu	Ala	Arg	Glu	225	230	235	240
Val	Phe	Arg	Leu	Thr	Gly	Gln	Asp	Pro	Asp	Arg	Val	Arg	Arg	Ile	Asp	245	250	255	
Ser	Ser	Gly	Leu	Arg	Arg	Ala	Ala	Val	Arg	Pro	Ala	Trp	Ser	Val	Leu	260	265	270	
Gly	His	Asp	Arg	Trp	Ala	Ala	Thr	Gly	Leu	Ala	Pro	Met	Arg	His	Trp	275	280	285	
Arg	Thr	Ala	Leu	Ala	Asp	Ala	Leu	Met	Gly	Asp	Pro	Val	Gly	Asp	Arg	290	295	300	
Leu	Pro	Glu	Ser	Val	Asn	Ser	Pro	Gly	Pro	Lys	Gly	Cys							

305

310

315

<210> 46  
 <211> 954  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 46  
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 ggcatgctcg gcggcgaaagt ggccgcccag ctcacggccc ggggcgccga cccggtgggg 120  
 gtcggcagtg cggatctgga cctcacgcac ccgcaggcgg tcgccgcggc cgtggccgac 180  
 ggcggccccc atgtcgtcgt caactgcgcc gcctggaccg ccgtggacct ggccgagacc 240  
 gaggaggagg cggccctcgc cgtcaacggg acgggagcgg gccacctcgc ccgggcctgc 300  
 gccgccaccg gcagccggct cctccacgtc tccaccgact acgtcttcgc aggtgccccg 360  
 gccgatgccg gacacccta tgccgaggac gccgaaccg accccgccac cgcgtacgga 420  
 cgcaccaagc tcgtcggcga gcgcgccgtc ctcgccgaac tccccgccac cgtgcccgtg 480  
 gtgcgcacgt cctggctgta cggacgcgac aacggcggct tcgtgcacac catggcccgg 540  
 ctgcgcgcg agccgggacg caccgtggac gtggtcgacg accagcacgg acagccgagc 600  
 tggacccccg atgtcgcggc ccggatcatc gagctcgccg ccctgcccgc cgaccgggcg 660  
 caggcgctct tccatgccac cggcgggggc cgcaccacct ggtacgacct ggcccgcgag 720  
 gtgttcgggc tgaccggcca ggaccggac cgggtccggc gcatcgacag ctccgggctg 780  
 cgacgggccc cggctccgcc ggcattggagc gttctggggc atgaccgctg ggccgccacg 840  
 gggctcgcgc cgatgcgtca ctggcgcacg gccctcgcgg acgccctcat gggcgacccc 900  
 gtgggcgacc gacttcccga gagtgtgaac tccccggcc cgaaaggctg ttga 954

<210> 47  
 <211> 204  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 47

Val	Lys	Ser	Leu	Ser	Ile	Glu	Gly	Ala	Trp	Leu	Tyr	Glu	Pro	Leu	Leu
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His	Asp	Asp	Glu	Arg	Gly	Thr	Phe	Leu	Glu	Val	Phe	Gln	Ser	Gln	Ala
			20					25					30		
Phe	Glu	Leu	Ala	Thr	Gly	Arg	Arg	Leu	Glu	Leu	Ala	Gln	Val	Asn	Cys
		35					40					45			
Ser	Val	Ser	Arg	Arg	Gly	Val	Val	Arg	Gly	Val	His	Phe	Ala	Asp	Leu
	50					55					60				

Pro Pro Gly Gln Ala Lys Tyr Val Thr Cys Val Arg Gly Ala Val Arg  
 65 70 75 80  
 Asp Val Ile Val Asp Leu Arg Thr Gly Ser Pro Thr Tyr Arg Ala Trp  
 85 90 95  
 Glu Ala Val Glu Leu Asp Asp Arg Asp Arg Arg Ala Val Phe Leu Ser  
 100 105 110  
 Glu Gly Leu Gly His Ala Phe Gln Ala Ile Thr Asp Asp Ala Thr Val  
 115 120 125  
 Val Tyr Leu Thr Thr Ser Gly Tyr Ala Pro Gly Arg Glu His Gly Val  
 130 135 140  
 His Pro Leu Asp Pro Glu Leu Gly Ile Thr Trp Leu Pro Gly Met Glu  
 145 150 155 160  
 Pro Leu Leu Ser Pro Lys Asp Ala Val Ala Pro Thr Leu Ala Val Ala  
 165 170 175  
 Glu Ala Gln Gly Leu Leu Pro Ala Tyr Glu Asp Cys Val Arg Tyr Val  
 180 185 190  
 Ser Ser Leu Ala Thr Pro Leu Ser Glu Glu Thr Pro  
 195 200

<210> 48  
 <211> 615  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 48  
 gtgaaatccc tgtcgataga gggcgcttgg ctctatgagc cgctgctcca cgacgatgag 60  
 cgcggcacgt tcttgagggt gttccagagc caggccttcg agctggccac cggccgcccgc 120  
 ctcgaactgg cccaggtcaa ctgctccgtg tcccgcgcgcg gcgtcgtgcg cggcgtccac 180  
 ttcgccgact taccgcccgg ccaggccaag tacgtcacct gcgtacgcgg cgcggtgcmc 240  
 gatgtgatcg tggacctgcm caccggctcg cccacctacc gcgcctggga ggccgtcgaa 300  
 ctcgacgacc gcgaccggcg ggcggtcttc ctctccgagg gcctcggcca cgccttccag 360  
 gcgatcaccg acgacgccac cgctcgtctac ctgaccacct cgggctacgc ccccggccgt 420  
 gagcacggcg tccacccgct cgaccggag ctgggcatca cctggcttcc cggcatggaa 480  
 ccgctgctgt ccccgaagga cgctgtcgcc cccaccctcg cggggtggga ggcccagggt 540  
 ctgctgcccc cgtacgagga ctgcgtacgg tacgtgtcct cgctcgccac accactcagc 600  
 gaggagaccc cgtga 615

<210> 49  
 <211> 328  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 49

Val	Ala	Asn	Lys	Pro	Ile	Leu	Phe	Tyr	Val	Leu	Glu	Gly	Ile	Ala	Asp	1	5	10	15
Ala	Gly	Val	Thr	Asp	Val	Gly	Ile	Ile	Val	Gly	Asp	Thr	Ala	Asp	Glu	20	25	30	
Ile	Arg	Ala	Ala	Val	Gly	Asp	Gly	Ser	Arg	Phe	Gly	Ile	Ser	Val	Thr	35	40	45	
Tyr	Ile	Pro	Gln	His	Gln	Pro	Leu	Gly	Leu	Ala	His	Ala	Val	Arg	Ile	50	55	60	
Ala	Arg	Asp	Trp	Leu	Gly	Glu	Asp	Asp	Phe	Val	Met	Tyr	Leu	Gly	Asp	65	70	75	80
Asn	Phe	Leu	Leu	Gly	Gly	Ile	Ser	Glu	Gln	Leu	Glu	Glu	Phe	Arg	Thr	85	90	95	
Arg	Arg	Pro	Ala	Ala	Gln	Ile	Met	Leu	Thr	Arg	Val	Pro	Asp	Pro	Ser	100	105	110	
Ala	Phe	Gly	Val	Val	Thr	Leu	Asp	Glu	Ala	Gly	Arg	Val	Thr	Gly	Leu	115	120	125	
Glu	Glu	Lys	Pro	Lys	Phe	Pro	Lys	Ser	Asp	Leu	Ala	Leu	Val	Gly	Val	130	135	140	
Tyr	Phe	Phe	Thr	Ala	Ala	Val	His	Asp	Ala	Val	Asp	Ala	Ile	Gln	Pro	145	150	155	160
Ser	Ala	Arg	Gly	Glu	Leu	Glu	Ile	Thr	Glu	Ala	Leu	Gln	Trp	Leu	Leu	165	170	175	
Asp	Lys	Gly	Leu	Gly	Ile	Ala	Ser	Ser	Thr	Val	Asn	Gly	Tyr	Trp	Lys	180	185	190	
Asp	Thr	Gly	Asn	Ala	Thr	Asp	Met	Leu	Glu	Val	Asn	Arg	Thr	Val	Leu	195	200	205	
Asp	Arg	Leu	Thr	Pro	Tyr	Cys	Asp	Gly	Ser	Val	Asp	Gly	Glu	Ser	Glu	210	215	220	
Leu	Val	Gly	Arg	Val	Val	Val	Glu	Asp	Gly	Ala	Val	Ile	Thr	Arg	Ser	225	230	235	240
Arg	Ile	Val	Gly	Pro	Ala	Ile	Ile	Gly	Arg	Gly	Thr	Arg	Val	Glu	Gly	245	250	255	
Ser	Tyr	Ile	Gly	Pro	Phe	Thr	Ser	Val	Gly	Ala	Asp	Cys	Val	Val	Val	260	265	270	
Asp	Ser	Glu	Ile	Glu	Tyr	Ser	Ile	Val	Leu	Ala	Gly	Ala	Ala	Ile	Asp	275	280	285	
Gly	Val	Gly	Arg	Ile	Glu	Ala	Ser	Met	Ile	Gly	Arg	Gln	Ala	Gln	Val	290	295	300	

Thr Pro Ala Pro Arg Thr Pro Gln Ala His Arg Leu Ile Leu Gly Asp  
 305 310 315 320

His Ser Lys Val Gln Ile Arg Ser  
 325

<210> 50  
 <211> 987  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 50  
 gtggccaaca aaccatcct cttctacgtc ctggaaggga tcgccgacgc gggcgtcacc 60  
 gatgtcggca tcatcgtcgg cgacacggcc gacgagatca gggcggccgt cggcgacggc 120  
 tcccgcttcg gcatcagcgt cacctacatc ccgcagcacc agccgctcgg cctggcccac 180  
 gccgtgcgca tcgcacggga ctggctcggc gaggacgact tcgtgatgta cctgggcgac 240  
 aacttctctg tcggcgggat cagcgagcag ctggaggagt tccgcacccg gcggcccgcc 300  
 gcgcagatca tgctcaccg ggtcccgat ccctccgct tcggcgctcgt caccctcgac 360  
 gaggcgggcc gggtcaccg cctggaggag aagccgaagt tccccaagag cgatctcgcg 420  
 ctggctcggcg tgtacttctt caccgccgcc gtgcacgacg ccgtggacgc catccagccc 480  
 tccgcccgcg gcgagctgga gatcacgag gccctccagt ggctcctcga caagggcctc 540  
 ggcacgcgt cctccacgg caacggctac tggaaggaca ccggcaacgc caccgacatg 600  
 ctggagggtca accgcacgg gtcgacagg ctgaccccgt actgcgacgg ctccgctcgac 660  
 ggcgagagcg aactggtcgg ccgggtcgtc gtcgaggacg gcgcggtgat caccgctcc 720  
 cggatcgtgg gccccgccat catcggccgc ggcacccgcg tcgagggctc ctacatcggc 780  
 ccgttcacct ccgtcggggc ggactgcgtg gtcgtcgaca gcgagatcga gtactccatc 840  
 gtgctggccg gcgcggccat cgacggcgtc ggccggatcg aggcgtccat gatcggccgt 900  
 caggcgcagg tcacccccgc gcccgcacg cccagggcc accgtctgat cctcggcgac 960  
 cacagcaagg tgcagatccg ttcatga 987

<210> 51  
 <211> 328  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 51

Met Asn Ile Leu Ile Thr Gly Ala Ala Gly Phe Ile Gly Ser His Leu  
 1 5 10 15

Val Arg Thr Ile Leu Gly Pro Asp Lys Pro Leu Gly Asp Asp Val Arg  
 20 25 30



Val Thr Val Leu Asp Ala Leu Thr Tyr Ala Gly Asn Arg Ala Ser Leu	35	40	45
Ala Ala Val Glu Asp Glu Pro Gly Phe Thr Phe Val His Gly Asp Ile	50	55	60
Thr Asp Ala Leu Leu Val Asp Arg Leu Val Ala Ala His Asp Ala Val	65	70	75
Val His Leu Ala Ala Glu Ser His Val Asp Arg Ser Ile Trp Arg Ala	85	90	95
Asp Ala Phe Val Arg Thr Asn Val Leu Gly Thr His Thr Leu Leu Glu	100	105	110
Ala Ala Leu Arg His Gly Thr Gly Pro Phe Val His Val Ser Thr Asp	115	120	125
Glu Val Tyr Gly Ser Val Pro Val Gly Ser Ser Val Glu Ser Asp Pro	130	135	140
Leu Thr Pro Ser Ser Pro Tyr Ser Ala Ser Lys Ala Ser Ser Asp Leu	145	150	155
Leu Ala Leu Ala Tyr His His Thr His Gly Leu Asp Val Arg Val Thr	165	170	175
Arg Cys Ser Asn Asn Tyr Gly Pro Tyr Gln His Pro Glu Lys Val Ile	180	185	190
Pro Leu Phe Val Thr Arg Leu Leu Ser Gly Ala Ala Val Pro Leu Tyr	195	200	205
Gly Asp Gly Gly Asn Val Arg Asp Trp Leu His Val Asp Asp His Cys	210	215	220
Arg Ala Leu Leu Ala Val Leu Thr Asp Gly Arg Ala Gly His Thr Tyr	225	230	235
Asn Ile Gly Gly Gly Thr Glu Leu Thr Asn Lys Glu Leu Thr Gly Leu	245	250	255
Leu Leu Asp Ala Cys Gly Ala Gly Trp Asp Arg Val Glu His Val Thr	260	265	270
Asp Arg Lys Gly His Asp Arg Arg Tyr Ser Val Asp Trp Thr Lys Ile	275	280	285
Arg Thr Glu Leu Gly Tyr Thr Pro Ala His Asp Phe Ala Glu Gly Leu	290	295	300
Ala Glu Thr Val Ala Trp Tyr Arg Thr Asn Arg Pro Phe Trp Ala Ala	305	310	315
Pro Gly Ala Glu Leu Gln Gly Ala	325		

<210> 52  
 <211> 987  
 <212> DNA

<213> Streptomyces aizunensis

<400> 52

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ctggggcccg acaaaccgct cggcgacgac gtccgcgtca ccgtcctgga cgcgctgacc 120
tacgcgggca accgcgcctc cctcgccgcc gtcgaggacg aaccgggctt caccttcgtg 180
cacggcgaca tcaccgacgc gctgctggtg gaccgcctgg tggcgggcca cgacgccgtg 240
gtgcacctgg ccgccgagtc gcacgtcgac cgttcgatct ggcgggccga cgcgttcgta 300
cgcaccaatg tgctcggcac ccacaccctg ctggaggccg cgctgcggca cggcaccggc 360
ccgttcgtgc acgtgtcgac cgacgaggtg tacggctcgg tcccggtcgg ctcgtccgtc 420
gagagcgacc cgctgacgcc cagctcgccc tactccgctt ccaaggcgct cagtgatctg 480
ctggccctgg cctaccacca caccacgga ctcgacgtgc gggtgacgag ctgctccaac 540
aactacgggc cctaaccagca cccggagaag gtgatccgc tcttcgtcac ccggctgctc 600
agtggcgccg ccgtcccgct ctacggcgac ggcgggaacg tacgcgactg gctgcacgtc 660
gacgaccact gccgcgtctt gctggccgtc ctcaccgacg ggcgcgcggg gcacacgtac 720
aacatcggcg gcggcaccga gtcaccaac aaggagctga ccggcctgct gctggacgcc 780
tgcggcgcgg gatgggaccg ggtcgagcac gtcaccgacc gcaagggcca cgaccgccgg 840
tactccgtcg actggacgaa gatccgcacc gagctgggct acacccccgc gcacgacttc 900
gccgagggcc tcgccgagac cgtcgccctg tacagaacca accgcccgtt ctgggcagcg 960
cccggggcgg agcttcaggg cgcata 987
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<210> 53

<211> 214

<212> PRT

<213> Streptomyces aizunensis

<400> 53

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Asp Val Ser Leu Ile Gln Ile Arg Gln Pro Ala Ile Pro Ser Ser Tyr
20          25          30
Arg Met Ile Cys Phe Pro Ser Ser Arg Asn Ser Ser Ile Cys Tyr Leu
35          40          45
Ala Met Ser Glu Leu Leu Leu Pro Thr Val Glu Leu Leu Ile Val Gln
50          55          60
Tyr Pro Ala Leu Thr Ser Glu Glu Glu His Ser Ala Glu Glu Asp Ala
65          70          75          80
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Ala Leu Ala Asp Lys Ile Phe Glu Ala Val Arg Gly Trp Ala Asp Arg  
85 90 95

Pro Leu Ala Leu Phe Gly His Arg Leu Gly Ala Glu Leu Ala Tyr Ala  
100 105 110

Val Ala Gln Arg Leu Glu Arg Glu Thr Asp Ala Ala Pro Leu Thr Leu  
115 120 125

Phe Val Ser Gly Arg Thr Gly Pro Gly His Arg Gly Ser Leu Gly Pro  
130 135 140

Pro Ala Leu Asn Cys Arg Val Val Ala Leu Ala Gly Tyr His Asp Pro  
145 150 155 160

Arg Ala Pro Leu Ala Gly Val Arg Ala Trp Arg Arg Cys Thr Ala Gly  
165 170 175

Arg Phe Asp Leu Glu Val Phe Pro Gly Thr Arg Gly Tyr Leu Asp Ser  
180 185 190

His Arg Arg Glu Val Val Asn Leu Val His Asp Gln Leu Ile Ser Leu  
195 200 205

Arg Gly Pro Glu Pro Asp  
210

<210> 54  
<211> 645  
<212> DNA  
<213> Streptomyces aizunensis

<400> 54  
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atccagatcc ggcagccggc gatcccgagc agctaccgca tgatctgttt cccagttcg 120  
cggaactcct cgatctgcta tctggccatg tcggaactgc tgctgcccac cgtggaactg 180  
ctcatcgtcc agtaccggc cctgacctcc gaggaggagc attcggccga ggaggacgcg 240  
gcgctcgccg acaagatctt cgaagcggtc cggggctggg ccgaccgcc gctcgccctc 300  
ttcgggcacc gcctcgggtc cgaactcgcc tacgcggtcg cccagcggct ggaacgggag 360  
accgacgcg caccctgac cctgttcgtc tccggacgca cgggaccggg ccaccgcggc 420  
agcctcggcc cgcccgcgct caactgccg gtcgtcgccc tggccgggta ccacgacccc 480  
cgcgcacccc tggccggggg acgggcctgg cggcgtgca cggcgggacg gttcgacctg 540  
gaggtctttc ccggcacccg cggctacctc gactcgacc gccgagagg cgtcaacctc 600  
gtgcacgacc agctgatttc gctccgcgga ccggagcccc actga 645

<210> 55  
<211> 470  
<212> PRT  
<213> Streptomyces aizunensis

<400> 55

Val	Arg	Pro	Met	Thr	Ala	Lys	Ile	Phe	Ala	Val	Asp	Ser	Val	Arg	Pro	1	5	10	15
Ile	Asp	Glu	Phe	Glu	Gln	Asp	Ala	Leu	Arg	Val	Ala	Asp	Val	Ile	Arg	20	25	30	
Glu	Arg	Gly	Val	Cys	Leu	Gly	Asp	Arg	Val	Met	Leu	Lys	Ala	Gly	Asn	35	40	45	
Ser	Ala	Ser	Tyr	Val	Cys	Val	Leu	Tyr	Ala	Leu	Met	His	Ile	Gly	Ala	50	55	60	
Ser	Ile	Val	Leu	Val	Asp	Gln	Gln	Glu	His	Lys	Glu	Glu	Thr	Arg	Arg	65	70	75	80
Ile	Ala	Leu	Arg	Thr	Gly	Val	Lys	Val	Thr	Phe	Val	Asp	Asp	Glu	Thr	85	90	95	
Pro	Ile	Asp	Gln	Asp	Ala	Asp	Pro	Ile	His	Leu	Tyr	Glu	Leu	Met	Val	100	105	110	
Ala	Thr	Gln	Asn	Arg	Pro	Pro	Met	Asp	Ser	Ala	Leu	Ser	Phe	Asp	Ala	115	120	125	
Trp	Gly	Glu	Leu	Ser	Asp	Gly	Leu	Ile	Met	Trp	Thr	Ser	Gly	Ser	Thr	130	135	140	
Gly	Ser	Pro	Lys	Gly	Val	Val	Lys	Ser	Gly	Gly	Lys	Phe	Leu	Ala	Asn	145	150	155	160
Leu	Arg	Arg	Asn	Ala	His	Gln	Val	Gly	His	Arg	Pro	Asp	Asp	Val	Leu	165	170	175	
Met	Pro	Leu	Leu	Pro	Phe	Ala	His	Gln	Tyr	Gly	Leu	Ser	Met	Val	Leu	180	185	190	
Ile	Ala	Trp	Leu	Thr	Arg	Cys	Ser	Leu	Val	Ile	Ala	Pro	Tyr	Arg	Arg	195	200	205	
Leu	Asp	Arg	Ala	Leu	Arg	Met	Ala	Arg	Asp	Ser	Gly	Thr	Thr	Val	Ile	210	215	220	
Asp	Ala	Thr	Pro	Ser	Ser	Tyr	Arg	Ser	Ile	Leu	Gly	Leu	Val	Thr	Arg	225	230	235	240
Lys	Pro	Ala	Leu	Arg	Ala	His	Leu	Ala	Gly	Thr	Arg	Met	Phe	Cys	Val	245	250	255	
Gly	Ala	Ala	Pro	Leu	Asp	Ala	Pro	Leu	Val	Glu	Ser	Tyr	Val	Gln	Glu	260	265	270	
Phe	Gly	Leu	Pro	Leu	Leu	Asp	Ser	Tyr	Gly	Ser	Thr	Glu	Leu	Asn	Asn	275	280	285	
Ile	Ala	Phe	Ala	Thr	Leu	Asp	Asn	Pro	Val	Ser	Cys	Gly	Arg	Ala	Met	290	295	300	

Glu Gly Ile Gly Leu Arg Ile Val Asp Glu Asp Gly Arg Glu Val Ala  
 305 310 315 320  
 Ala Gly Gln Pro Gly Glu Ile Glu Val Asp Thr Pro Asp Ala Leu Glu  
 325 330 335  
 Gly Gln Ile Ala Glu Asp Gly Ser Ile Ile Pro Ala Pro Thr Gly Trp  
 340 345 350  
 Gln Arg Thr Gly Asp Leu Gly His Leu Asp Ala Asp Gly Asn Leu Tyr  
 355 360 365  
 Val Leu Gly Arg Lys Phe Ala Val His Arg Met Gly Tyr Thr Leu Tyr  
 370 375 380  
 Pro Glu Leu Ile Glu Arg Lys Val Ala Ala Glu Gly Cys Pro Thr Arg  
 385 390 395 400  
 Ile Val Pro Leu Pro Asp Glu Leu Arg Gly Ser Gln Leu Val Phe Phe  
 405 410 415  
 Val Glu Asp Asp Glu Gln Arg Asp Ala Gly Tyr Trp Arg Glu Arg Leu  
 420 425 430  
 Cys Gly Leu Leu Pro Ala Phe Glu Gln Pro Asn Lys Val Val Val Leu  
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 450 455 460  
 Thr Arg Met Ala Ala Glu  
 465 470

<210> 56  
 <211> 1413  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 56  
 gtgcgaccga tgaccgcgaa gatctttgca gtcgactcgg tacgacccat agacgagttc 60  
 gagcaggacg ccctccgcgt cgccgatgtg atccgcgaac gcggagtctg tctcggcgac 120  
 cgggtcatgc tgaaggccgg caactcggcg agctacgtct gtgtgctgta cgcgctgatg 180  
 cacatcggcg cctcgatcgt cctcgtcgac cagcaggaac acaaggagga gacccgccgc 240  
 atcgcgctgc gcaccggcgt caaggtcacc ttcgtcgacg acgagacccc gatcgaccag 300  
 gacgccgacc ccattccact gtacgaactc atggtggcca cccagaaccg tccgcccatg 360  
 gacagcgccc tgtcgttcga cgctggggc gagctgtccg acggcctcat catgtggacc 420  
 tcgggctcca ccggtatgcc caagggcgtg gtgaagtccg gcgggaagtt cctggccaac 480  
 ctccggcgca acgcccacca ggctcgccac cgtcccgcag acgtcctgat gccgctgctg 540  
 ccgttcgccc accagtacgg cctgtcgatg gtcctcatcg cctggctcac ccgctgctcc 600  
 ctggtgatcg cccctaccg gcgtctggac cgggcgctgc gcatggcccg cgactcgggc 660

accacggtca tcgacgcgac cccctccagc taccggagca tcctgggcct ggtgaccagg 720  
 aagcccgccc tgcgcgcgca cctggcgggc acccggatgt tctgtgtcgg cgcgccccg 780  
 ctcgacgcac cgctggtgga gagctacgta caggagtctg gcctgccgct gctcgacagc 840  
 tacggctcga ccgagctgaa caacatcgcc ttcgccaccc tcgacaaccc ggtctcctgc 900  
 ggccgtgccca tggagggcat cgggctccgg atcgtcgacg aggacggccg ggaggtggcg 960  
 gccgggcagc cgggcgagat cgaggtcgac acccccgacg cactcgaagg gcagatagcc 1020  
 gaggacgggtt cgatcattcc ggcgcccacc ggctggcagc gcacggggcga cctcggccac 1080  
 ctcgacgcgg acggcaacct ctacgtcctg ggacgcaagt tcgccgtgca ccgcatgggc 1140  
 tacacgtctt atcccgagct catcgagcgc aaggctcgcc ccgagggctg cccaccccg 1200  
 atcgtgcccc tgcccgaaga actgcgcggc tcccagctgg tgttcttcgt cgaggacgac 1260  
 gagcagcggg acgccggcta ctggcgggag cggctgtgcg gcctgctgcc cgccttcgag 1320  
 cagcccaaca aggtggtcgt cctggagcag ttcccgctca accgcaacgg caagccggac 1380  
 aagaaggagc tgacgcggat ggccgccgaa tag 1413

<210> 57  
 <211> 553  
 <212> PRT  
 <213> *Streptomyces aizunensis*  
 <400> 57

Met	Thr	Ser	Phe	Ser	Pro	Ala	Pro	Thr	Thr	Met	Leu	Val	Pro	Asp	Phe
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Pro	Phe	Ser	Tyr	Asp	Gly	Trp	Leu	Arg	His	Pro	Ala	Gly	Leu	Gly	Ala
			20					25					30		
Leu	Pro	Pro	Glu	Arg	Ala	Gly	Thr	Pro	Val	Ala	Val	Val	Gly	Gly	Gly
		35					40					45			
Met	Ala	Gly	Met	Thr	Ala	Ala	Tyr	Glu	Leu	Met	Arg	Leu	Gly	Leu	Arg
		50				55					60				
Pro	Val	Val	Tyr	Glu	Ala	Glu	Gln	Leu	Gly	Gly	Arg	Met	Arg	Ser	Val
65					70				75						80
Pro	Phe	Pro	Gly	Gln	Pro	Gly	Leu	Val	Ala	Glu	Met	Gly	Ala	Met	Arg
				85					90					95	
Phe	Pro	Leu	Ser	Ala	Arg	Ser	Leu	Phe	His	Tyr	Ile	Asp	Leu	Leu	Gly
			100					105					110		
Leu	Arg	Thr	Ser	Pro	Phe	Pro	Asn	Pro	Leu	Ala	Ala	Asn	Thr	Pro	Ser
		115					120					125			
Thr	Leu	Ile	Asp	Leu	Gly	Gly	Glu	Arg	His	Thr	Ala	Arg	Ser	Ala	Glu

130					135					140					
Gln	Leu	Pro	Asp	Val	Tyr	Gln	Glu	Val	Ala	Ser	Ala	Trp	Glu	Lys	Ala
145					150					155					160
Leu	Gln	Glu	Arg	Ala	Glu	Leu	Ala	Thr	Met	Arg	Asp	Ala	Ile	Gln	Arg
				165					170					175	
Arg	Asp	Val	Glu	Thr	Val	Lys	Gln	Ile	Trp	Asn	Arg	Leu	Val	Arg	Glu
			180					185					190		
Phe	Asp	Asp	Gln	Ser	Phe	Tyr	Gly	Phe	Leu	Ala	Thr	Ser	Ser	Ala	Phe
		195					200					205			
Pro	Ser	Phe	Arg	His	Arg	Glu	Ile	Phe	Gly	Gln	Val	Gly	Phe	Gly	Thr
	210					215					220				
Gly	Gly	Trp	Asp	Thr	Asp	Phe	Pro	Asn	Ser	Leu	Leu	Glu	Ile	Leu	Arg
225					230					235					240
Val	Val	Tyr	Thr	Glu	Ala	Asp	Asp	Asn	Gln	Val	Ala	Ile	Asp	Gly	Gly
				245					250					255	
Ser	Gln	Gln	Val	Pro	Arg	Gly	Leu	Trp	Glu	His	Arg	Pro	Arg	Gly	Cys
			260					265					270		
Ala	His	Trp	Pro	Ala	Gly	Thr	Ser	Leu	Ala	Ser	Leu	His	Gly	Gly	Thr
		275					280					285			
Ala	Arg	Pro	Arg	Val	Arg	Ala	Val	Ala	Arg	Asp	Gly	Asp	Gly	Phe	Leu
	290					295					300				
Val	Thr	Asp	Ala	Asp	Gly	His	Arg	Glu	Arg	Phe	Ala	Ser	Val	Val	Tyr
305					310					315					320
Thr	Pro	His	Val	Trp	Thr	Leu	Leu	Asn	Arg	Val	Ala	Cys	Asp	Pro	Ala
			325						330					335	
Leu	Leu	Thr	Gln	Pro	Leu	Trp	Thr	Ala	Val	Glu	Arg	Thr	His	Tyr	Met
			340					345					350		
Gly	Ala	Ser	Lys	Leu	Phe	Val	Leu	Ala	Asp	Arg	Pro	Phe	Trp	Asn	Asp
		355					360					365			
Thr	Asp	Pro	Arg	Thr	Gly	Arg	Pro	Val	Met	Ser	Met	Thr	Leu	Thr	Asp
	370					375					380				
Arg	Met	Pro	Arg	Gly	Val	Tyr	Leu	Phe	Asp	Asp	Gly	Pro	Asp	Arg	Pro
385					390					395					400
Gly	Val	Met	Cys	Leu	Ser	Tyr	Thr	Trp	Asn	Asp	Asp	Ser	Leu	Lys	Met
			405						410					415	
Ala	Thr	Leu	Ser	Ala	Asp	Glu	Arg	Leu	Asp	Val	Leu	Leu	Glu	Lys	Leu
			420					425					430		
Gly	Val	Ile	Tyr	Pro	Gly	Val	Asp	Ile	Arg	Ser	His	Val	Ile	Gly	Asp
	435					440					445				
Pro	Ile	Thr	Ile	Thr	Trp	Glu	Ser	Glu	Pro	His	Phe	Met	Gly	Ala	Phe

450		455		460
Lys Ser Asn Leu Pro Gly Gln Tyr Arg Tyr Gln Arg Arg Leu Phe Thr				
465		470		475
				480
Gln Phe Met Gln Arg Gly Leu Pro Arg Ala Gln Arg Gly Phe Phe Leu				
	485		490	495
Cys Gly Asp Asp Val Ser Trp Thr Ala Gly Phe Ala Glu Gly Ala Val				
	500		505	510
Thr Thr Ala Leu Asn Ala Val Trp Gly Val Leu Asp His Leu Gly Gly				
	515		520	525
Ala Thr Pro Pro Gly Asn Pro Gly Pro Gly Asp Leu Phe Asp Ala Leu				
	530		535	540
Ala Pro Leu Asp Leu Pro Tyr Asp Ser				
545		550		

<210> 58  
 <211> 1662  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 58  
 atgacgtcat tcagcccggc tcccaccacc atgctcgtgc ccgacttccc gttctcctac 60  
 gacggctggc tgcgccatcc cgccggactc ggcgcccttc cgcccagcgc cgccgggtacg 120  
 ccgggtggccg tggtcggcgg gggaatggcg ggaatgaccg ccgcgtacga actgatgcgg 180  
 ctgggcctgc gcccggtcgt atacgaggcg gagcaactgg gtggccggat gcggtcggtg 240  
 cccttccccg ggcagcccgc cctcgtggcg gagatggggg cgatgcgctt cccgtctctc 300  
 gcgcgctcgc tgttccacta catcgacctg ctggggctgc gcaccagccc cttccccaac 360  
 ccgctggcgg cgaacacccc gagcaccctc atcgacctcg gcggcgaacg gcacaccgcg 420  
 cggctccgcg agcaactccc ggatgtgtac caggagggtg cctcggcctg ggagaaggcc 480  
 ctgcaggagc gggccgagct ggccaccatg cgggacgcca tccagcgccg cgacgtcgag 540  
 acggtgaagc agatatggaa ccgactggtc agggagtctg acgaccagtc cttctacggg 600  
 ttcttggcga ccagttcggc gttcccgtcg ttccggcacc gggagatctt cggccagggtg 660  
 gggttcggca ccggcgggtg ggacaccgac ttccccaaact cgctcctcga aatcctgcgc 720  
 gtggtctaca ccgaggcgga cgacaaccag gtcgccatcg acggcggctc ccagcagggtg 780  
 ccgcgcgggc tgtgggagca ccggccgcgg ggctgcgcgc actggccggc cggcacctct 840  
 ctcgcctcgc tgcacggagg gacggcccgc ccacgggtgc gggccgtcgc cagggacggt 900  
 gacggcttcc tcgtcaccga cgccgacgga caccgggagc ggttcgcctc ggtggtgtac 960  
 accccgcacg tgtggaccct gctgaaccgg gtcgcgtgcg atccggcgct gctgacgcag 1020



ccgctgtgga cgcgcgtgga gcgcacccac tacatggggg cctccaaact gttcgtcctg 1080  
 gccgaccggc ccttctggaa cgacaccgat ccgcggaaccg gccgtccggg gatgagcatg 1140  
 acgctcacgg accggatgcc gcgcgggggtg tatctcttcg acgacggccc ggaccgcccc 1200  
 ggcgtgatgt gcctgtcgta cacctggaac gacgactcgc tgaagatggc gacgctgagc 1260  
 gccgacgagc ggctggacgt gctgctggag aagctcggcg tgatctatcc cggcgtcgac 1320  
 atccgctccc acgtcatcgg tgatccgata accatcacct gggagagcga gccgcatttc 1380  
 atgggcgcgt tcaagtccaa tctgccgggc cagtaccgct accagcgcag gctgttcacg 1440  
 cagttcatgc agcgcgggct gccgcggggc cagcgcggct tcttcctgtg cggcgacgac 1500  
 gtgtcctgga cggcgggctt cgcgaggggc gcggtcacga cggcgctgaa cgcggtgtgg 1560  
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 ttcgacgcgc tggctcccct cgacctcccc tacgacagct ga 1662

<210> 59  
 <211> 231  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 59

Met	Ile	Glu	Glu	Leu	Leu	Pro	Glu	Gly	Ala	Val	Ala	Ser	Glu	Ala	Phe	1	5	10	15
Gly	Pro	Asp	Gly	Ser	Ala	Leu	Leu	Tyr	Pro	Glu	Glu	Ala	Ala	Leu	Val	20	25	30	
Ala	Met	Thr	Thr	Asp	Leu	Arg	Arg	Glu	Glu	Phe	Ala	Thr	Val	Arg	Ala	35	40	45	
Cys	Ala	Arg	Arg	Ala	Leu	Ala	Ala	Leu	Gly	Leu	Pro	Ser	Ala	Pro	Val	50	55	60	
Leu	Pro	Gly	Val	Arg	Asn	Val	Pro	Gln	Trp	Pro	Asp	Gly	Val	Val	Gly	65	70	75	80
Ser	Met	Thr	His	Cys	Ala	His	Tyr	Arg	Ala	Ala	Val	Leu	Ala	Arg	Asp	85	90	95	
Thr	Asp	Leu	Ala	Met	Ile	Gly	Ile	Asp	Ala	Glu	Pro	Asp	Leu	Pro	Leu	100	105	110	
Pro	Glu	Gly	Val	Leu	Glu	Ser	Ile	Ala	Leu	Pro	Arg	Glu	Leu	Ala	Trp	115	120	125	
Ala	Arg	Ser	Gly	Gly	Tyr	Gly	Ser	Ser	Leu	Arg	Arg	Asp	Arg	Leu	Leu	130	135	140	
Phe	Ser	Ala	Lys	Glu	Ala	Val	Tyr	Lys	Thr	Trp	Tyr	Pro	Leu	Leu	Gly	145	150	155	160

Thr Glu Leu Asp Phe Asp Asp Ala Asp Ile Thr Phe Arg His Glu Val  
 165 170 175  
 Gly Pro Asn Gly Arg Pro Gln Gly Thr Phe Thr Ala Arg Ile Leu Arg  
 180 185 190  
 Pro Leu Pro Gly Pro Asp Gly Arg Pro Val Asp Arg Phe Thr Gly Arg  
 195 200 205  
 Trp Leu Ser Asp Arg Gly Ile Ile Val Thr Val Ile Thr Leu Pro Ala  
 210 215 220  
 Tyr Arg Val Ala Thr Thr Arg  
 225 230

<210> 60  
 <211> 696  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 60  
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 tcggcgctgc tctaccccga ggaggcgggc ctggtcgcca tgacgacgga tctgcgccgc 120  
 gaggagttcg ccaccgtccg ggcgtgtgcg cggcgcgccc tcgccgcact ggggctgccg 180  
 tctgctcccc tactgcccgg ggtgcgcaat gtgccccagt ggcccgcagg cgtggtcggc 240  
 agcatgacct attgcgcca ctaccgggccc gccgtcctgg cgcgggacac ggacctggcg 300  
 atgatcgga tcgacgccga acccgatctg cccctgcccg aaggggtgct ggagtcgatc 360  
 gcgctgccgc gcgagctggc ctgggcgcgc tcgggaggat acggctccag cctgcgccgg 420  
 gaccgtctgc tcttcagtgc caaggaagcg gtctacaaga cctggtaccc gctgctgggc 480  
 accgagctgg acttcgacga cgccgacatc accttcgcc acgaggtcgg cccgaacggc 540  
 cggccgcagg gcacgttcac ggcccgcatt ctgctgccc tgcccgtcc cgacggggcg 600  
 ccggtggaca ggttcacggg ccgctggctt tcggaccgcg gcatcatcgt cacggtcatc 660  
 accctgcccg cctatcgctt ggcgaccacg cggtaa 696

<210> 61  
 <211> 306  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 61

Met Ser His Thr Pro Pro Asp His Val Thr Ala Glu Ala Gly Pro Arg  
 1 5 10 15  
 Leu Leu Ala Val Ser Asp Leu His Ile Gly Met Ala Asp Asn Arg Pro  
 20 25 30  
 Ile Thr Glu Ser Leu Arg Pro Ser His Glu Asp Asp Trp Leu Ile Val

35					40					45					
Ala	Gly	Asp	Val	Gly	Glu	Leu	Thr	Glu	Asp	Ile	Glu	Trp	Ala	Leu	Arg
50					55					60					
Leu	Leu	Ala	Gly	Arg	Phe	Ala	Lys	Val	Val	Trp	Ala	Pro	Gly	Asn	His
65				70						75				80	
Glu	Leu	Trp	Thr	Pro	Arg	Glu	Asp	Thr	Val	Gln	Leu	Arg	Gly	Glu	Glu
				85					90					95	
Arg	Tyr	Arg	Tyr	Leu	Val	Glu	Met	Cys	Arg	Gly	Leu	Gly	Val	Val	Thr
			100					105					110		
Pro	Glu	Asp	Pro	Trp	Pro	Val	Trp	Glu	Gly	Pro	Gly	Gly	Pro	Val	Ala
		115					120					125			
Val	Ala	Pro	Leu	Phe	Leu	Leu	Tyr	Asp	Tyr	Thr	Phe	Arg	Val	Ala	Gly
	130					135					140				
Thr	Ser	Thr	Lys	Glu	Glu	Ser	Leu	Ala	Arg	Ala	His	Glu	Ala	Gly	Val
145				150					155					160	
Val	Cys	Thr	Asp	Glu	Tyr	Leu	Leu	His	Pro	Asp	Pro	Tyr	Arg	Ser	Arg
			165						170					175	
Asp	Asp	Trp	Cys	Arg	Ala	Arg	Val	Ser	Ala	Thr	Arg	Arg	Arg	Leu	Val
			180					185					190		
Ala	His	Asp	Pro	Ser	Val	Pro	Leu	Val	Leu	Val	Asn	His	Phe	Pro	Leu
		195					200					205			
Val	Arg	Glu	Pro	Thr	Asp	Val	Leu	Trp	His	Pro	Glu	Phe	Ala	Gln	Trp
	210					215					220				
Cys	Gly	Thr	Val	Leu	Thr	Ala	Asp	Trp	His	Arg	Arg	Phe	Ser	Thr	Ala
225				230					235					240	
Ala	Val	Val	Tyr	Gly	His	Leu	His	Ile	Pro	Arg	Thr	Thr	Trp	Tyr	Asp
			245					250						255	
Gly	Val	Arg	Phe	Glu	Glu	Val	Ser	Ile	Gly	Tyr	Pro	Arg	Glu	Trp	Arg
		260						265					270		
Arg	Arg	Gly	His	Pro	Arg	Gly	Leu	Leu	Arg	Gln	Ile	Leu	Pro	Tyr	Thr
		275					280					285			
Pro	Glu	Pro	Glu	Pro	Glu	Thr	Pro	Ala	Arg	Thr	Glu	Pro	Gln	Glu	Thr
	290					295					300				
Arg	Ala														
305															

<210> 62  
 <211> 921  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 62  
 atgtcgcaca caccgcctga ccacgtcacc gctggaggccg gtccccggct gctcgcgggtg

60

agcgatctgc acatcgggat ggccgacaac cggcccatca ccgagtcgct gcgcccctcc 120  
 caccaggacg actggctgat cgtggccggg gacgtcggcg agctgaccga ggacatcgag 180  
 tgggcgctgc gcctgctggc cgggcggttc gccaaggctg tgtgggcgcc gggcaaccac 240  
 gagctgtgga ccccgcgca ggacacggtg cagttgcgcg gcgaggagcg ctaccggtac 300  
 ctgggtggaga tgtgccgggg gctgggcgtg gtcacgcccg aggaccctg gccggtgtgg 360  
 gaggggtccc gcgggccggt cgcggtcgct ccgctgttcc tgctgtacga ctacacgttc 420  
 cgggtggcgg gcacctcgac caaggaggag tcgctggccc gggcgcacga ggcgggtgtg 480  
 gtgtgcacgg acgagtacct gctccacccc gaccctgacc ggagccgtga cgactgggtgc 540  
 cgggcccctg tctccgcaac ccggcgggcg ctgggtggcg acgatccgtc ggtgccgctg 600  
 gtgctggtca accacttccc gctggtgcgc gagcccacgg acgtgctgtg gcaccgggag 660  
 ttccgcaagt ggtgcggcac ggtgctgacc gccgactggc accgccggtt cagcacggcc 720  
 gccgtggtgt acgggcacct gcacatcccc aggaccacct ggtacgacgg ggtccggttc 780  
 gaggaggtgt cgatcggcta cccgcgcgag tggcgccggc gcggccatcc cagggggctg 840  
 ctgcggcaga tcctgccgta caccgccgaa ccggaaccgg agacccccgc caggaccgaa 900  
 ccgcaggaga cacgggcatg a 921

<210> 63  
 <211> 998  
 <212> PRT  
 <213> Streptomyces aizunensis  
 <400> 63

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 Gly Arg Leu Thr Ser Phe Val Ser Gly Thr Ala Ser Gly Ala Val Ala  
 20 25 30  
 Ala Ala Ala Ala Gly Thr Gly Arg Ile Ala Val Ile Asp Gly Pro Val  
 35 40 45  
 Ala Ser Gly Lys Thr Ala Leu Leu His Arg Val Leu Glu Leu Thr Ala  
 50 55 60  
 Gly Ala Gly Pro Arg Val Ile Thr Ala Val Thr Ser Pro Ala Glu Gln  
 65 70 75 80  
 Ser Met Pro Phe Gly Val Val Glu Gln Leu Val Arg Asp Ala Gln Ala  
 85 90 95  
 Val Ser Asp Arg Leu Pro Leu His Pro Ser Ala Gly Pro Asp Ala Ala  
 100 105 110

Leu Asp Ser Thr Pro Arg Pro Glu Ser Glu Pro Val Pro Ala Glu Ile  
 115 120 125  
 Leu Met Ala Phe His Leu Gln Leu Ala Glu Val Cys Ala Arg Gly Pro  
 130 135 140  
 Val Leu Ile Val Val Asp Asp Val Gln Tyr Ala Asp Pro Gln Ser Leu  
 145 150 155 160  
 Tyr Cys Leu Ala His Met Leu Leu Arg Ala Ser Ala Ser Gly Ala Val  
 165 170 175  
 Val Ser Leu Leu Val Ser Arg Gly Pro Asp Val Gly Gly Thr Pro Pro  
 180 185 190  
 Val Val Leu Glu Glu Leu Leu Tyr Gln Leu Arg Gly Leu His Val Arg  
 195 200 205  
 Leu Gly Pro Leu Ser Val Asp Gly Val Gly Arg Leu Leu Ala Ala Arg  
 210 215 220  
 Asp Pro Glu Ala Gly Ala Arg Lys Pro Ala Ala Pro Ala Ser Trp Ser  
 225 230 235 240  
 Thr Pro Leu Ala Ala Ser Val His Ala Ala Thr Gly Gly Asn Pro Leu  
 245 250 255  
 Leu Val His Gly Leu Ile Glu Asp Arg Leu Ser Arg Gln Arg Leu Leu  
 260 265 270  
 Ala Ala Gly Pro Gly Ala Gly Pro Ala Ser Ala Glu Ala Gly Asn Gly  
 275 280 285  
 Thr Gly Asn Glu Thr Glu Asp Ala Leu Ala Gly Thr Pro His Ala Gly  
 290 295 300  
 Asp Gln Phe Leu Gln Ser Ala Leu Ile Cys Val His Arg Thr Gly Ser  
 305 310 315 320  
 Asp Gly Leu Arg Val Ala Gln Gly Ile Ala Leu Leu Gly Gly Ala Gly  
 325 330 335  
 Ser Thr Ser Leu Leu Ala Arg Leu Val Glu Val Glu Glu Trp Thr Val  
 340 345 350  
 Glu Gln Val Val Thr Ala Leu Asn Glu Ala Gly Val Leu Glu Lys Ser  
 355 360 365  
 Val Phe Arg His Gly Gly Val Gln Thr Ala Val Val Glu Ser Leu Thr  
 370 375 380  
 Asp Glu Ala Ala Thr Arg Leu Arg Gln Arg Ala Ala Val Leu Leu Tyr  
 385 390 395 400  
 Glu Asp Gly Ala Ala Pro Leu Thr Ile Ala Ala Gln Leu Leu Ser His  
 405 410 415  
 Glu Met Ser Ala Pro Asp Glu Glu Trp Val Pro Arg Val Leu Ser Glu  
 420 425 430

Ala	Ala	Arg	Ala	Ala	Leu	Cys	Thr	Gln	Gln	Val	Glu	Phe	Ala	Val	Arg	
		435					440					445				
Cys	Leu	Arg	Met	Ala	Glu	Ser	Cys	Cys	Arg	Asp	Glu	Thr	Glu	Arg	Met	
	450					455					460					
Leu	Leu	Arg	Ala	His	Leu	Ala	Lys	Tyr	Ile	Trp	Arg	Val	Gln	Pro	Ser	
465					470					475					480	
Ala	Trp	Pro	Gln	Gln	Leu	Arg	Pro	Leu	Leu	Gly	Ala	Val	Arg	Asp	Gly	
				485					490					495		
Leu	Leu	Pro	Pro	Val	Asp	Thr	Val	Arg	Leu	Val	Tyr	Asp	Leu	Leu	Trp	
			500					505					510			
Asn	Gly	Trp	Met	Asp	Asp	Ala	Ala	Ala	Ala	Ile	Arg	Gln	Val	Val	Asp	
		515					520					525				
Val	Leu	His	Arg	Ser	Pro	Asp	Ala	Arg	Leu	Ala	Thr	Glu	Leu	Gly	Ala	
	530					535					540					
Leu	Arg	Leu	Ala	Leu	Ala	Ser	Thr	Tyr	Pro	Ala	Val	Leu	Glu	His	Leu	
545					550					555					560	
Gly	Asp	Val	Pro	Ala	Pro	Ala	Arg	Gly	Ala	Gly	Glu	Arg	Leu	Ser	Ala	
				565					570					575		
Gln	Glu	Glu	Ile	Leu	Leu	Thr	Ser	Ala	Arg	Val	Leu	His	Gly	Val	Leu	
			580					585					590			
Arg	Gly	Gly	Asp	Gly	Ala	Arg	Asp	Thr	Asp	Pro	Asp	Thr	Asp	Ala	Glu	
		595					600					605				
Asp	Phe	Ala	Glu	Ser	Ala	Glu	Arg	Thr	Leu	Ala	Gly	Thr	Arg	Leu	Thr	
	610					615					620					
Glu	Glu	Thr	His	Leu	Gly	Leu	Arg	Ala	Cys	Leu	Leu	Thr	Leu	Phe	Tyr	
625					630					635					640	
Ala	Asp	Arg	Pro	Ala	Thr	Ala	Thr	Leu	Trp	Ala	Asp	Arg	Leu	Leu	Val	
				645					650					655		
Glu	Ala	Ala	Asp	Arg	Lys	Ala	Pro	Gly	Trp	Thr	Ala	Val	Leu	Arg	Ala	
			660					665					670			
Ile	Arg	Ala	His	Met	Ser	Leu	Arg	Arg	Gly	His	Leu	Val	Glu	Ala	Arg	
		675					680					685				
Arg	Leu	Ala	Glu	Gln	Ala	Leu	Asp	Gln	Leu	Pro	Pro	His	Gly	Trp	Gly	
	690					695					700					
Val	Gly	Ile	Gly	Met	Pro	Leu	Ser	Ala	Leu	Ile	Glu	Ala	Arg	Thr	Ala	
705					710					715					720	
Met	Gly	Asp	His	Glu	Ala	Ala	Ala	Glu	Leu	Leu	Asp	Arg	Pro	Val	Pro	
			725					730					735			
Glu	Asp	Met	Leu	Thr	Thr	Arg	His	Gly	Leu	His	Tyr	Leu	Tyr	Ala	Arg	
		740						745					750			

Gly Arg His Gln Leu Ala Thr Gly Arg His His Ala Ala Leu Thr Asp  
 755 760 765  
 Phe Thr Ala Cys Gly Glu Leu Met Arg Arg Trp Gly Met Asp Arg Ser  
 770 775 780  
 Thr Leu Val Pro Trp Arg Val Gly Val Ala Glu Ala Arg Leu Ala Leu  
 785 790 795 800  
 Gly Ser Arg Glu Glu Ala Glu Arg Phe Ala Arg Glu Gln Leu Ala Gly  
 805 810 815  
 Asp Ala Gly Gln Arg Val Arg Gly His Ala Leu Arg Val Leu Ala Ala  
 820 825 830  
 Ala Arg Pro Leu Arg Glu Arg Pro Ala Leu Leu Ala Gln Ala Val Ala  
 835 840 845  
 Leu Leu Gln Glu Asp Ser Asp Trp Tyr Glu Leu Ala Arg Ala Leu Thr  
 850 855 860  
 Asp Leu Gly Gln Ala Tyr Lys Gln Leu Gly Asp Pro Ser Gln Gly Lys  
 865 870 875 880  
 Val His Thr Arg Arg Ala Trp Arg Ile Ala Lys Gly Cys Gly Ala Arg  
 885 890 895  
 Glu Leu Tyr Arg Ser Leu His Pro Ser Gln Pro Pro Ala Pro Ser Ala  
 900 905 910  
 Pro Ala Ala Gln Pro Arg Pro Ala Ala Pro Ala Asp Ala Ala Arg Pro  
 915 920 925  
 Pro Ser Ala Ala Val Ser Ser Leu Thr Asp Ala Glu Arg Lys Val Ala  
 930 935 940  
 Ala Leu Ala Ala His Gly Tyr Thr Asn Arg Glu Ile Gly Ala Lys Leu  
 945 950 955 960  
 Phe Ile Thr Val Ser Thr Val Glu Gln His Leu Thr Arg Val Tyr Arg  
 965 970 975  
 Lys Ile Asn Ile Thr His Arg Gln Asp Leu Pro Val Ser Leu Asp Thr  
 980 985 990  
 Asp Val Ala His Thr Ala  
 995

<210> 64

<211> 2997

<212> DNA

<213> *Streptomyces aizunensis*

<400> 64

atggggaagg cttttgcagc tgtgttggtg gagcgagatg aacagatcgg aagactgacc 60

tccttcgtat ccggcaccgc ttccggcgcg gtggccgcgg ccgccgccgg gaccggccgg 120

atcgccgtga tcgacgggcc ggtggcttcg ggaaagacgg cgctctcca tcgctgtctg 180

gagctgacgg	ccggggcggg	gccacgcgtc	atcacccgcg	tcacctcgcc	cgcggaacag	240
tccatgccgt	tcggcggtgt	ggagcagctg	gtgcgcgacg	cgcaggccgt	ctccgaccgg	300
ctgccgctcc	acccgtcggc	cggaccggac	gcggcgctgg	actcgacgcc	gcggccggag	360
tcggagccgg	taccgcgca	gacccatcatg	gccttcacc	tccagctcgc	cgaggtctgc	420
gcgcgcgggc	cggctctgat	cgctcgtcgc	gacgtgcagt	acgccgaccc	gcagtcgctg	480
tactgcctcg	cccacatgct	gctccggggc	tccgcctccg	gcgcggtggt	gtcgctgctg	540
gtgagcccg	gcccggacgt	gggcggcacg	ccgcccgctc	tcttgaggga	attgctctac	600
caactgcccc	gcctgcacgt	ccggctgggt	ccgctcagt	tcgacggcgt	cgcccggtg	660
ctcgccggcc	gggacccgga	ggccggagcg	aggaagcccc	cgcccccctg	ctcggtgtcc	720
accccgtggt	ccgcctccgt	ccacgcggcg	accggcgcca	accccctgct	cgtccacggg	780
ctcatcgagg	accgcctcag	ccgacagcga	ctcttggcgg	ccggccccgg	tgcgggcccc	840
gcgtcgcccg	aggccgggaa	cgggaccggg	aacgagaccg	aggacgccct	cgcggaacg	900
ccccacgcgg	gcgaccagtt	cctgcagagc	gcgctgatct	gtgtgcaccg	cacgggatcc	960
gacggcctgc	gggtcgccca	gggcacgcgc	ctgctggggc	gcgcgggac	gacgtcactg	1020
ctcgccccgc	tcgtggaggt	cgaggagtgg	accgtggagc	aggtgggtcac	cgccctcaac	1080
gaggcgggcg	tcttgagaaa	gtccgtattc	cggcacggcg	gcgtgcagac	cgcggtggtg	1140
gagagcctga	ccgacgaggc	ggcgacgcgg	ctgcgccagc	gggcggccgt	gctgctgtac	1200
gaggacgggg	cggcgccgtt	gaccatcgcg	gcccaactgc	tcagccatga	gatgagcgcc	1260
cccgacgagg	aatgggtgcc	gcgggtgctg	agcgaggccg	cgcgtgcggc	gctgtgcacg	1320
cagcaggtcg	agttcgcggt	gcgctgtctg	cggatggcgg	agagctgctg	ccgcgacgag	1380
acggagcgga	tgtgtgtgcg	ggcgcatctg	gccaaagtaca	tctggcggtt	ccagccgtcc	1440
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gccgcgaccc	gccaggtcgt	cgacgtactg	caccggtccc	ccgacgcccg	gctcgccacc	1620
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acggacccgg	acacggacgc	ggaggacttc	gccgagagcg	ccgagcgga	cctggccggc	1860
acgcggctga	cggaggagac	ccacctcggg	ctgcgcgcgt	gcctgctgac	gctcttctac	1920
gcggaccggc	cggccacggc	gacgtgtgtg	gccgaccggc	tgtgtgtgga	ggcgcgggac	1980



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 ttcacacccg tcagcacggt cgagcagcat ctgaccggg tctaccggaa gatcaacatc 2940  
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<210> 65  
 <211> 518  
 <212> PRT  
 <213> *Streptomyces aizunensis*  
  
 <400> 65

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Glu	Glu	Ala	Val	Arg	Gly	Pro	Ser	Asp	Arg	Ala	Thr	Glu	Ala	Gln	His
			20					25					30		
Ala	Lys	Gly	Lys	Leu	Thr	Ala	Arg	Glu	Arg	Ile	Gly	Leu	Leu	Leu	Asp
		35					40					45			
Glu	Gly	Ser	Phe	Arg	Glu	Val	Glu	Gln	Leu	Arg	Arg	His	Arg	Ala	Ser
	50					55					60				
Gly	Phe	Gly	Leu	Glu	Ala	Lys	Arg	Pro	Tyr	Thr	Asp	Gly	Val	Ile	Thr
65					70					75				80	
Gly	Trp	Gly	Thr	Ile	Glu	Gly	Arg	Thr	Val	Phe	Val	Tyr	Ala	His	Asp
				85					90					95	

Phe	Arg	Ile	Phe	Gly	Gly	Ala	Leu	Gly	Glu	Ala	His	Ala	Thr	Lys	Ile	100	105	110
His	Lys	Ile	Met	Asp	Met	Ala	Ile	Ala	Ala	Gly	Ala	Pro	Leu	Val	Ser	115	120	125
Leu	Asn	Asp	Gly	Ala	Gly	Ala	Arg	Ile	Gln	Glu	Gly	Val	Ser	Ala	Leu	130	135	140
Ala	Gly	Tyr	Gly	Gly	Ile	Phe	Gln	Arg	Asn	Thr	Lys	Ala	Ser	Gly	Val	145	150	155
Ile	Pro	Gln	Ile	Ser	Val	Met	Leu	Gly	Pro	Cys	Ala	Gly	Gly	Ala	Ala	165	170	175
Tyr	Ser	Pro	Ala	Leu	Thr	Asp	Phe	Val	Phe	Met	Val	Arg	Glu	Thr	Ser	180	185	190
Gln	Met	Phe	Ile	Thr	Gly	Pro	Asp	Val	Val	Lys	Ala	Val	Thr	Gly	Glu	195	200	205
Glu	Ile	Thr	Gln	Asn	Gly	Leu	Gly	Gly	Ala	Asp	Val	His	Ala	Gly	Thr	210	215	220
Ser	Gly	Val	Ala	His	Phe	Ala	Tyr	Asp	Asp	Glu	Glu	Thr	Cys	Ile	Ala	225	230	235
Glu	Val	Arg	Tyr	Leu	Leu	Ser	Met	Leu	Pro	Ser	Asn	Asn	Arg	Glu	Asn	245	250	255
Pro	Pro	Ala	Val	Gln	Ala	Gly	Asp	Pro	Ala	Asp	Arg	Arg	Cys	Asp	Ala	260	265	270
Leu	Leu	Asn	Leu	Val	Pro	Val	Asp	Gly	Asn	Arg	Pro	Tyr	Asp	Met	Leu	275	280	285
Lys	Val	Ile	Glu	Glu	Ile	Val	Asp	Asp	Gly	Asp	Tyr	Val	Glu	Ile	His	290	295	300
Glu	Gly	Trp	Ser	Arg	Asn	Ile	Ile	Cys	Ala	Leu	Ala	Arg	Leu	Asp	Gly	305	310	315
Gln	Val	Val	Ala	Ile	Val	Ala	Asn	Gln	Pro	Gln	Phe	Leu	Ala	Gly	Val	325	330	335
Leu	Asp	Ile	Gly	Ala	Ser	Glu	Lys	Ala	Ala	Arg	Phe	Val	Gln	Met	Cys	340	345	350
Asp	Ala	Phe	Asn	Ile	Pro	Ile	Val	Thr	Leu	Leu	Asp	Val	Pro	Gly	Phe	355	360	365
Leu	Pro	Gly	Val	Asp	Gln	Glu	His	Gly	Gly	Ile	Ile	Arg	His	Gly	Ala	370	375	380
Lys	Leu	Leu	Tyr	Ala	Tyr	Cys	Asn	Ala	Thr	Val	Pro	Arg	Ile	Ser	Leu	385	390	395
Ile	Leu	Arg	Lys	Ala	Tyr	Gly	Gly	Ala	Tyr	Ile	Val	Met	Asp	Ser	Gln	405	410	415

Ser Ile Gly Ala Asp Leu Thr Tyr Ala Trp Pro Thr Asn Glu Ile Ala  
 420 425 430  
 Val Met Gly Ala Glu Gly Ala Ala Asn Val Ile Phe Arg Arg Gln Ile  
 435 440 445  
 Ala Glu Ser Gly Asp Pro Glu Ala Met Arg Ala Arg Met Val Lys Glu  
 450 455 460  
 Tyr Lys Ala Glu Leu Met His Pro Tyr Tyr Ala Ala Glu Arg Gly Leu  
 465 470 475 480  
 Val Asp Asp Val Ile Asp Pro Ala Glu Thr Arg Glu Val Leu Ile Ala  
 485 490 495  
 Ser Leu Ala Met Leu Arg Thr Lys His Ala Asp Leu Pro Pro Arg Lys  
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 His Gly Asn Pro Pro Gln  
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<210> 66  
 <211> 1557  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 66  
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 gagcggatcg gccttttgct ggacgaggggt tcgttcaggg aggtcgaaca gctgcggcgg 180  
 caccggggcca gcggtttcgg cctggaggcg aagaggcctt acacggatgg tgtgatcacc 240  
 gggtggggca ccatcgaggg ccgtacgggtc ttcgtctacg cgcacgactt ccgcatcttc 300  
 ggcggggcgc tgggcgaggg ccacgccacg aagatccaca agatcatgga catggcgatc 360  
 gccgcgggtg ctccgctggt ctcgctgaac gacggcgcgg gcgccgtat ccaggagggc 420  
 gtctcggcgc tggccgggta cggcggcatc ttccagcgca acaccaaggc gtccgggggtc 480  
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 ctgacggact tcgtgttcat ggtccgtgag acctcgacga tgttcatcac cggtcgggac 600  
 gtggtcaagg ccgtcaccgg cgaggagatc acgcagaacg ggctcggcgg cgcgacgtg 660  
 cagccgggga cctcggggcg cgcgacttc gcgtacgacg acgaggagac ctgcatcgcg 720  
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 caggccgggg acccggccga ccggcgctgc gacgccttgc tgaacctcgt accggtggac 840  
 gggaaccgtc cgtacgacat gctcaagggtc atcgaggaga tcgtcgacga cggcgactac 900  
 gtcgagatcc acgagggtcg gtcccgaac atcatctgcg cgctggcccg tctggacggc 960  
 caggtggtcg ccatcgtcgc caaccagccg cagttcctgg ccggcgtgct ggacatcggg 1020

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 aactgctcg atgtgcccgg cttcctgccg ggcgtcgacc aggagcacgg cgggatcatc 1140  
 cggcacggcg cgaagctgct gtacgcgtac tgcaacgcga ccgtgccgcg gatctccctg 1200  
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 gtcgacgacg tcacgcaccc tgccgagacc cgcgaggtgc tgatcgctc cctcgccatg 1500  
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<210> 67  
 <211> 329  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 67

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Thr	Asp	Arg	Thr	Leu	His	Phe	Ala	Gly	Pro	Ala	Thr	Phe	Gly	Arg	Ile
			20					25					30		
Pro	Arg	Ile	Asp	Gln	Val	Glu	Lys	Thr	Asp	Ile	Ala	Val	Val	Gly	Val
		35					40					45			
Pro	Phe	Asp	Ser	Gly	Val	Thr	Tyr	Arg	Pro	Gly	Ala	Arg	Phe	Gly	Gly
	50					55					60				
Asn	Ala	Ile	Arg	Glu	Ala	Ser	Arg	Thr	Leu	Arg	Pro	Tyr	Asn	Pro	Ala
65					70					75				80	
Gln	Asn	Val	Tyr	Pro	Phe	His	Phe	Ser	Gln	Val	Ala	Asp	Ala	Gly	Asp
				85					90					95	
Ile	Ser	Ala	Asn	Pro	Phe	Asp	Leu	Asn	Asp	Ala	Val	Glu	Thr	Ile	Glu
			100					105					110		
Ala	Ala	Ala	Asp	Asp	Leu	Ile	Ser	Ser	Gly	Ala	Arg	Leu	Met	Thr	Leu
		115					120					125			
Gly	Gly	Asp	His	Thr	Ile	Ala	Leu	Pro	Met	Leu	Arg	Ala	Val	Ala	Lys
	130					135					140				
Lys	His	Gly	Pro	Leu	Ala	Val	Leu	His	Phe	Asp	Ala	His	Leu	Asp	Thr
145					150					155					160
Trp	Asp	Asp	Tyr	Phe	Gly	Gln	Gln	Tyr	Thr	His	Gly	Met	Pro	Phe	Arg
				165					170					175	

Arg Ala Val Glu Glu Gly Ile Leu Asp Thr Ser Ala Leu Ser His Val  
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 Gly Thr Arg Gly Pro Ile Tyr Gly Lys Lys Asp Leu Asp Asp Asp Glu  
 195 200 205  
 Lys Leu Gly Phe Gly Ile Val Thr Ser Ala Asp Val Met Arg Arg Gly  
 210 215 220  
 Val Asp Glu Val Ala Gln Gln Leu Arg Glu Arg Val Gly Asp Arg Pro  
 225 230 235 240  
 Leu Tyr Ile Ser Ile Asp Ile Asp Val Leu Asp Pro Ala His Ala Pro  
 245 250 255  
 Gly Thr Gly Thr Pro Glu Ala Gly Gly Leu Thr Ser Arg Glu Leu Leu  
 260 265 270  
 Glu Ile Leu Arg Gly Leu Ala Asp Cys His Leu Val Ser Ala Asp Ile  
 275 280 285  
 Val Glu Val Ala Pro Ala Tyr Asp His Ala Asp Ile Thr Ser Val Ala  
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 Ala Ser His Ala Ala Tyr Glu Leu Ile Ser Ile Met Ser Lys Gln Ile  
 305 310 315 320  
 Ala Pro Val Arg Trp Gly Ala Thr Gln  
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<210> 68  
 <211> 990  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 68  
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 aagaaggatc tcgacgacga cgagaagctc ggcttcggca tcgtcacctc ggccgatgtg 660  
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 gccccggtcc gctgggggtgc gacgcagtaa 990

<210> 69  
 <211> 521  
 <212> PRT  
 <213> Streptomyces aizunensis

<400> 69

Val	Thr	Pro	Gln	Asp	His	Trp	Trp	Ser	Ala	Ser	Gln	Ser	Tyr	Val	Ser	1	5	10	15
Asp	Ile	Leu	Ser	Val	Phe	Ala	Ala	Ala	Pro	Asp	Arg	Pro	Ala	Val	Asn	20	25	30	
Trp	Arg	Gly	Glu	Thr	Ala	Ser	Gly	Gly	Glu	Leu	Ile	Arg	Ser	Val	Thr	35	40	45	
Glu	Ala	Phe	His	Ala	Leu	His	Asp	Ser	Gly	Val	Arg	Ala	Gly	Asp	Val	50	55	60	
Val	Ala	Ile	Leu	Val	Ala	Pro	Asn	Ser	Pro	Glu	Met	Leu	Thr	Ala	Arg	65	70	75	80
Tyr	Ala	Ala	His	Leu	Leu	Gly	Gly	Ala	Val	Cys	Tyr	Leu	Arg	Ser	Thr	85	90	95	
Asn	Pro	Gly	Thr	Ser	Glu	Val	Ala	Leu	Pro	Leu	Asp	Gln	Gln	Ile	Arg	100	105	110	
Ile	Leu	Arg	Asp	Thr	Glu	Ala	Val	Thr	Val	Tyr	Thr	Asp	Ala	Glu	Asn	115	120	125	
Ala	Pro	Arg	Ala	Ala	Glu	Leu	Ala	Ala	Gly	Ala	Ser	Gly	Leu	Pro	Val	130	135	140	
Thr	Cys	Leu	Thr	Gly	Glu	Ala	Arg	Lys	Arg	Glu	Ser	Ala	Glu	Asp	Ala	145	150	155	160
Pro	Arg	Ala	Leu	Pro	Trp	Ala	Pro	Asp	Ala	Leu	Ala	Leu	Ile	Thr	Phe	165	170	175	
Thr	Ser	Gly	Ser	Thr	Gly	Arg	Pro	Lys	Gly	Ile	Arg	Leu	Ala	Gly	Arg	180	185	190	
Ala	Trp	Asn	Gly	Leu	Val	Gln	Gly	Met	Val	Ala	Ala	Gly	Gly	Glu	Ala	195	200	205	
Glu	Gly	Val	Lys	Leu	Leu	Val	Thr	Thr	Pro	Leu	Ser	His	Thr	Val	Gly	210	215	220	

Ser	Met	Ala	Asp	Thr	Ala	Leu	Ala	Leu	Gly	Gly	Glu	Val	Tyr	Leu	His	225	230	235	240
Glu	Asn	Phe	Asn	Ala	Glu	Gln	Phe	Val	Asn	Thr	Val	Ala	Asp	Glu	Gly	245	250	255	
Ile	Ala	Trp	Thr	Phe	Met	Ala	Thr	Val	His	Leu	Phe	Gln	Leu	Leu	Asp	260	265	270	
His	Leu	Glu	Glu	Arg	Gly	Leu	Lys	Asp	Val	Glu	Glu	Gly	Arg	Leu	Ala	275	280	285	
Pro	Leu	Gln	Arg	Leu	Ile	Tyr	Ser	Gly	Ser	Ala	Ala	Ala	Pro	Ala	Arg	290	295	300	
Ile	Ala	Gln	Ala	Val	Lys	Ala	Phe	Gly	Leu	Ile	Ile	Val	Gln	Ala	Tyr	305	310	315	320
Gly	Thr	Gly	Glu	Thr	Gly	Arg	Leu	Thr	Thr	Leu	Phe	Pro	His	Glu	His	325	330	335	
Leu	Asp	Pro	Trp	Leu	Ser	Thr	Thr	Val	Gly	Arg	Pro	Phe	Pro	Asp	Val	340	345	350	
Glu	Val	Val	Val	Gly	Asp	Gln	Glu	Ser	Gly	Ala	Pro	Leu	Ala	Thr	Gly	355	360	365	
Glu	Val	Gly	Glu	Val	Arg	Val	Arg	Ser	Pro	His	Met	Met	Asp	Gly	Tyr	370	375	380	
Thr	Gly	Asp	Pro	Ala	Ala	Thr	Ala	Lys	Val	Leu	Arg	Asp	Gly	Trp	Tyr	385	390	395	400
His	Thr	Gly	Asp	Ile	Gly	Tyr	Thr	Asp	Glu	His	Gly	Tyr	Leu	His	Leu	405	410	415	
Leu	Gly	Arg	Val	Ala	Asp	Val	Val	Lys	Val	Asn	Gly	Val	Lys	Val	His	420	425	430	
Pro	Thr	Val	Val	Glu	Arg	Glu	Leu	Leu	Ser	Leu	Ala	Gly	Val	Arg	His	435	440	445	
Ala	Ala	Val	Tyr	Gly	Val	Arg	Asp	Gln	Asp	Ala	Val	Glu	His	Leu	His	450	455	460	
Ala	Thr	Ile	Val	Cys	Asp	Pro	Ala	Val	Pro	Val	Glu	Thr	Asp	Ala	Ile	465	470	475	480
Arg	Ala	His	Leu	Ala	Gln	Ser	Leu	Ser	Gly	Leu	His	Val	Pro	Glu	Lys	485	490	495	
Ile	Ser	Val	Val	Ala	Asp	Leu	Pro	Leu	Asn	Asp	Asn	Gly	Lys	Pro	Asp	500	505	510	
Lys	Val	Arg	Leu	Gln	Leu	Leu	Asp	Ser	515	520									

<210> 70  
 <211> 1566  
 <212> DNA

<213> Streptomyces aizunensis

<400> 70

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ccgcgcgc	tgccgtgggc	cccggatgca	ctggccctca	tcacgttcac	cagcggcagc	540
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cacaccggcg	acatcggtca	caccgacgaa	cacggctatc	tgcacctgct	gggccgggtc	1260
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tcctga						1566

<210> 71

<211> 410



<212> PRT

<213> Streptomyces aizunensis

<400> 71

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20 25 30  
His Phe Pro Ser Ala Ser Ala Arg Gln Asp Gly Val Asp Ser Gln Ile  
35 40 45  
Ser Val Trp Cys Ser Asn Asp Tyr Leu Gly Met Gly Gln Asn Pro Gln  
50 55 60  
Val Ile Glu Ala Met Lys Lys Thr Ile Asp Thr His Gly Val Gly Ser  
65 70 75 80  
Gly Gly Ser Arg Asn Ile Gly Gly Thr Asn His Tyr His Val Leu Leu  
85 90 95  
Glu Ala Glu Leu Ala Asp Leu His Gly Lys Glu Ala Ala Leu Leu Phe  
100 105 110  
Thr Ser Gly Tyr Thr Ala Asn Asp Gly Ser Leu Ser Val Leu Ala Gly  
115 120 125  
Thr Pro Lys Asp Thr Ile Val Phe Ser Asp Glu Lys Asn His Ala Ser  
130 135 140  
Ile Ile Asp Gly Leu Arg His Ser Gly Ala Gln Lys His Ile Phe Arg  
145 150 155 160  
His Asn Asp Val Ala His Leu Ala Glu Leu Leu Ala Ala Ala Pro Ala  
165 170 175  
Asp Arg Pro Lys Leu Ile Val Leu Glu Ser Val Tyr Ser Met Ser Gly  
180 185 190  
Asp Ile Ala Pro Leu Ala Glu Ile Ala Glu Leu Ala Arg Arg Tyr Asp  
195 200 205  
Ala Thr Thr Tyr Ile Asp Glu Val His Ala Val Gly Met Tyr Gly Pro  
210 215 220  
Gln Gly Ala Gly Ile Ala Ala Arg Glu Gly Ile Ala Asp Gln Phe Thr  
225 230 235 240  
Val Val Met Gly Thr Leu Ala Lys Gly Tyr Gly Thr Val Gly Gly Tyr  
245 250 255  
Ile Ala Gly Pro Ala Ala Leu Val Asp Ala Val Arg Thr Leu Ser Arg  
260 265 270  
Ala Phe Val Phe Thr Thr Ser Leu Pro Pro Ala Val Ala Ala Gly Ala  
275 280 285  
Leu Glu Ala Val Arg Tyr Leu Arg Asn Ser Asp Val Glu Arg Lys Val

290	295	300
Leu Ala Glu Asn Ala Gln Leu Leu His Arg Leu Leu Asp Glu Ala Asp		
305	310	315 320
Ile Pro Phe Ile Ser Pro Asp Ser His Ile Val Ser Ala Phe Ile Gly		
	325	330 335
Asp Asp Glu Thr Cys Lys Gln Ala Ser Arg Leu Leu Phe Glu Arg His		
	340	345 350
Gly Ile Tyr Val Gln Ser Ile Asn Ala Pro Ser Val Pro Leu Gly Gln		
	355	360 365
Glu Ile Leu Arg Ile Ala Pro Ser Thr Val His Gly Arg Glu Asp Val		
	370	375 380
Glu Asn Phe Ala Glu Ala Leu Arg Gly Ile Trp Lys Glu Leu Asn Ile		
385	390	395 400
Pro Thr Ala Thr Asp Arg Asn Trp Leu Ser		
	405	410

<210> 72  
 <211> 1233  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 72  
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 cggcgtgaat tcttgagat cggccgcgc tccggacact tccccagcgc cagcgcgcgc 120  
 caggacggcg tggactcca gatcagcgtc tgggtgcagca acgactacct cggtatgggg 180  
 cagaaccccc aggtcatcga ggcgatgaag aagaccatcg acaccacgg cgtgggctcc 240  
 ggccggctcgc ggaacatcgg tggcaccaac cactaccacg tgctgctcga agcggagctg 300  
 gcggacctcc acggcaagga ggcggcgctc ctcttcacct ccggctacac ggccaacgac 360  
 ggttccttga gcgtcctggc cgggacgcc aaggacacga tcgtcttctc cgacgagaag 420  
 aaccacgcgt cgatcatcga cgggctgcgg cacagcggcg cgcagaagca catcttccgg 480  
 cacaacgacg tcgcgcacct ggcggagctg ctgcggccg ccccgccga ccgtccgaag 540  
 ctgatcgtcc ttgagtcggt ctattcgatg tcgggcgaca tcgcgccgt ggccgagatc 600  
 gccgagctcg cgcgccgcta cgacgccacc acgtacatcg acgaggtgca cgcggctcggc 660  
 atgtacggtc cgcagggcgc cggcatcgcc gcccgtagg gcatagccga ccagttcacc 720  
 gtcgtgatgg gcacgtggc caagggctac ggcaccgtcg gcggctacat tgccgggtccc 780  
 gccgacctcg tcgacgccgt gcgcaccctg tcgcgcgcct tcgtcttcac cacctcgtg 840  
 ccgccggccg tcgcggcggg tgcgtggag gccgtgcgt acctccgga ctccgacgtc 900  
 gagcgggaagg tgctggcgga gaacgcccag ctgctgcacc ggctgctcga tgaggccgac 960

atcccgttca tctcgccgga ctgcacatc gtctccgcct tcatcgggga cgacgagacc 1020  
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 gccccagcg tgccgctcgg ccaggagatc ctgcggatcg cgccgtccac ggtgcacggg 1140  
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 ccgacggcca ccgacaggaa ctggctttcg tga 1233

<210> 73  
 <211> 506  
 <212> PRT  
 <213> Streptomyces aizunensis  
 <400> 73

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Pro	Ser	Arg	Thr	Ala	Leu	Val	Cys	Gly	Ala	Glu	Arg	Ile	Ser	Tyr	Ala
			20					25					30		
Arg	Leu	Trp	Asp	Arg	Ala	Arg	Arg	Tyr	Ala	Ala	Ala	Leu	Arg	Gly	Gln
		35					40					45			
Gly	Ile	Gly	Pro	Asp	Asp	Lys	Val	Ala	Leu	Leu	Met	Pro	Asn	Thr	Pro
	50					55					60				
Glu	Phe	Ala	Ala	Val	Tyr	Phe	Ala	Val	Leu	Ala	Leu	Gly	Ala	Val	Val
65					70				75						80
Val	Pro	Val	His	Thr	Leu	Leu	Lys	Pro	Ala	Glu	Val	Ser	His	Leu	Leu
			85					90						95	
Arg	Asp	Ser	Gly	Ala	Arg	Ala	Leu	Val	Trp	Ala	Gly	Thr	Leu	Pro	Gln
			100					105					110		
Glu	Thr	Ala	Arg	Asp	Ala	Gly	Glu	Thr	Gly	Val	Leu	Leu	Leu	Thr	Val
		115					120					125			
Gly	Glu	Ala	Leu	His	Gly	Ser	Val	Leu	Leu	Asp	Asp	Gly	Val	Glu	Pro
		130				135					140				
Ile	Asp	Thr	Tyr	Val	Glu	Arg	Gly	Ala	Asp	Asp	Leu	Ala	Leu	Val	Leu
145					150					155					160
Tyr	Thr	Ser	Gly	Thr	Thr	Gly	Arg	Pro	Lys	Gly	Ala	Met	Leu	Thr	His
				165					170					175	
Gly	Asn	Val	Ala	Thr	Asn	Ile	Ala	Val	Thr	Ala	Val	Ser	Pro	Phe	Ala
			180					185					190		
Phe	Gly	Glu	Asp	Asp	Val	Leu	Leu	Gly	Ala	Leu	Pro	Leu	Ser	His	Thr
		195					200					205			
Phe	Gly	Gln	Ile	Cys	Gly	Met	Ala	Val	Thr	Phe	His	Ala	Gly	Ala	Thr
		210				215					220				

Leu Val Val Met Glu Arg Phe Glu Ala His Asp Ala Leu Arg Leu Met  
 225 230 235 240  
 Arg Glu His Gly Cys Thr Val Phe Met Gly Val Pro Thr Met Tyr His  
 245 250 255  
 Ala Leu Leu Glu Ala Val Ala Ala Gly Ala Pro Ala Pro Arg Leu Thr  
 260 265 270  
 Arg Val Tyr Ser Gly Gly Ser Ala Leu Pro Val Pro Val Leu Asp Arg  
 275 280 285  
 Val Arg Ala Ala Phe Gly Cys Glu Val Tyr Glu Gly Tyr Gly Leu Thr  
 290 295 300  
 Glu Thr Ser Pro Cys Val Ala Tyr Asn Gln Pro Gly Ile Pro Cys Lys  
 305 310 315 320  
 Pro Gly Thr Val Gly Leu Pro Ile Asp Gly Val Arg Val Ala Ile Ala  
 325 330 335  
 Asp Ala Glu Leu Glu Gly Arg Ile Arg Leu Leu Lys Gln Gly Asp Ile  
 340 345 350  
 Gly Glu Ile Val Val Ser Gly His Asn Val Met Ala Gly Tyr Leu Gly  
 355 360 365  
 Arg Pro Gln Glu Thr Ala Glu Val Leu Val Asp Gly Trp Phe Arg Thr  
 370 375 380  
 Gly Asp Met Gly Val Gln Asp Glu Asp Gly Tyr Leu Ser Ile Val Asp  
 385 390 395 400  
 Arg Lys Lys Asp Met Ile Val Arg Gly Gly Tyr Asn Val Tyr Pro Arg  
 405 410 415  
 Glu Val Glu Asp Val Leu Leu Arg His Pro Ala Val Asp Gly Ala Cys  
 420 425 430  
 Val Val Gly Val Pro Ser Val Lys His Gly Glu Glu Val Cys Ala Val  
 435 440 445  
 Val Arg Val Lys Pro Gly Gln Arg Ala Ser Gly Leu Leu Ala Glu Glu  
 450 455 460  
 Ile Val Ala Trp Ser Arg Val His Met Ala Ala Tyr Lys Tyr Pro Arg  
 465 470 475 480  
 Arg Val Glu Phe Val Glu Thr Phe Pro Leu Gly Ser Ser Gly Lys Val  
 485 490 495  
 Leu Lys Arg Glu Leu Ala His Arg Tyr Ala  
 500 505

<210> 74  
 <211> 1521  
 <212> DNA  
 <213> Streptomyces aizunensis

<400> 74  
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tacgccgccg ccctgcgcgg ccagggcatc ggccccgacg acaaggtcgc gctgctgatg 180  
ccgaacaccc cggagttcgc ggcgggtgtac ttcgcgggtgc tcgcgctcgg cgccgtcgtc 240  
gtccccgttc acaccctgct gaagcccgcg gaggtctcgc atctcctccg ggactcggga 300  
gcgcggggccc tcgtatgggc cgggacgctc ccgcaggaga ccgcacggga cgccggggag 360  
accgggggtcc tgctcctgac cgtgggggag gccctgcacg gctccgtcct cctcgacgac 420  
ggcgtcgagc ccatcgacac gtatgtcgag cggggggcgg acgacctcgc gctggtgctg 480  
tacacctccg gtacgacggg caggccgaag ggggcgatgc tcacgcacgg caacgtcgcg 540  
acgaacatcg ccgtgaccgc cgtgtccccc ttcgccttcg gcgaggacga cgtgctgctc 600  
ggcgcgctgc cgctgtcgca caccttcggc cagatctgcg ggatggccgt caccttcac 660  
gcgggcgga cgctggtggt catggagcgc ttcgaggcgc acgacgccct gcggctgatg 720  
cgcgagcacg gctgcacggt cttcatgggc gtgccgacca tgtaccacgc gctgctcgaa 780  
gcggtcgcgg ccggcgcccc ggccgcgcgc ctacccgcg tgtacagcgg tgggtcggct 840  
ctgccggtgc cgggtgctga ccgggtgcgg gcggcgttcg gctgcgaggt gtacgagggg 900  
tacgggctca ccgagacctc gccctgcgtg gcgtacaacc agccgggcat ccctgcaag 960  
ccgggcacgg tggggctgcc catcgacggc gtacgggtcg ccatcgccga cgcgagctg 1020  
gaaggacgca tcaggctgct gaagcagggc gacatcggcg agatcgtcgt gagcggacac 1080  
aacgtgatgg cgggctacct cggccggccg caggagaccg ccgaggtact ggtcgacggc 1140  
tggttccgga ccggggacat gggcgtgcag gacgaggacg gctatctgtc catcgtcgac 1200  
cggaagaagg acatgatcgt ccgcggtggc tacaacgtct accccgcga ggtggaggac 1260  
gtactgctgc gccatcccgc cgtggacggc gcctgcgtgg tcggcgtgcc gagcgtgaag 1320  
cacggcgagg aggtgtgcgc cgtggtccgg gtgaagcccg gtcagcgcgc gagcggcttc 1380  
ctcgcggagg agatcgtggc ctggagccgg gtgcacatgg cggcctacaa gtaccgcgc 1440  
cgcgtcgagt tcgtggagac cttcccgctg ggatcgagcg gcaaggctct caagcgggag 1500  
ctggcacacc gctacgcgtg a 1521

<210> 75  
<211> 217  
<212> PRT  
<213> Streptomyces aizunensis

<400> 75

Val Pro Thr Arg Thr Val Glu Glu Asp Ile Glu Ile Val Leu Ile Val  
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 Arg Asp Asp Met Arg Arg Tyr Gly Val Glu Gly Met Cys Arg Ser Leu  
 20 25 30  
 Asp Thr Pro Val Glu Ala Gln Ser Tyr Ala Asp Phe Asp Asp Leu Asp  
 35 40 45  
 Pro Phe Ser Gly Gly Gln Leu Val Ile Leu Ser Ser Asp Ala Ala Gly  
 50 55 60  
 Pro Leu Ser Ala Glu Thr Ala Glu Ser Leu Arg Thr His Glu Ile Pro  
 65 70 75 80  
 Val Leu Ile Leu Val Asp Ser Ala Ala Pro Val Glu Gln Ser Trp Ala  
 85 90 95  
 Asp Gln Ala Arg Gly Phe Leu Asp Trp Ala Asp Leu Arg Pro Asp Thr  
 100 105 110  
 Leu Arg Asp Ala Ile Ala Asp Val Ala Ala Gly Arg Phe Phe Ala Ser  
 115 120 125  
 Glu Thr Leu Ala Arg Arg Ser Val Thr Ala Ala Glu Gln Thr Glu Gly  
 130 135 140  
 Gly Thr Pro Ala Ala Arg Ser Pro Ile Thr Leu Thr Ala Arg Glu Leu  
 145 150 155 160  
 Gln Val Leu Arg Leu Ile Ala Gly Gly Leu Ser Asn Arg Gln Ile Ala  
 165 170 175  
 Arg Ser Leu Asn Ile Ser Glu His Gly Val Lys Arg Leu Val Gly Ile  
 180 185 190  
 Val Leu Ala Lys Leu Asn Cys Pro Asn Arg Thr Leu Ala Val Val Arg  
 195 200 205  
 Ala Ile Asp Ala Gly Leu Leu Thr Leu  
 210 215

<210> 76

<211> 654

<212> DNA

<213> Streptomyces aizunensis

<400> 76

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tacgcggatt tcgatgatct cgaccccttc tccggaggcc agttgggtcat cctctccagt	180
gatgcggcgg gtcccccttc cgccgagacc gccgaaagcc tgccggacgca tgagataccc	240
gtgctgatcc tggctgactc ggccgccccg gtcgagcagt cctgggcccga ccaggcgcg	300
ggcttcctgg actgggcgga tctgcgcccc gacaccttgc gcgacgcgat cgccgatgtg	360

gcggccgggc gcttcttcgc gtcggagacc ttggcgcggc gctccgtgac ggcggcggag 420  
cagacggagg gcggaacgcc cgcggcgcgg agcccgatca cgctgacggc gcgtgaactc 480  
caggtcctgc gcctgatcgc gggcgggtctg agcaatcggc agatcgcgcg gtcgctgaac 540  
atctccgagc acggtgtcaa acgcttggtc gggatcgtcc tggccaagct caactgtccg 600  
aaccgcacgc tcgccgtggg ccgtgccatt gacgcggggtc tcctcacctt gtga 654

<210> 77  
<211> 442  
<212> PRT  
<213> Streptomyces aizunensis  
<400> 77

Met Thr Lys Asn Gln Glu Pro Arg Asp Pro Ser Gly Thr Arg Pro Arg  
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Lys Ala Ala Ala Ser Gly Lys Pro Ser Leu His His Ala Val Pro Pro  
20 25 30  
Thr Gly Pro Gly Gly Pro Pro Ala Ala Ala Asp Ser Gln Ile Thr Leu  
35 40 45  
Arg Ser Pro Ala Glu Leu Ala Asp Ala Leu Pro Tyr Met Leu Gly Phe  
50 55 60  
His Pro Thr Asp Ser Leu Val Met Val Ala Leu His Gly Glu Gly Gly  
65 70 75 80  
Arg Phe Gly Gly Arg Leu Arg Val Gly Ile Pro Thr Asp Arg Gly Glu  
85 90 95  
Trp Glu Asp Thr Ala Arg Gln Val Ala Asp Cys Leu Val His Gly Ser  
100 105 110  
Glu Arg Arg Gly Gly Lys Pro Asp Gly Ile Val Val Phe Leu Cys Gln  
115 120 125  
Asp Pro Arg Gly Gly Glu Ser Gly Gln Arg Val Met Thr Arg Leu Arg  
130 135 140  
Pro Leu Ala Gln Arg Ile Arg Leu Ala Cys Gly Ala Leu Asp Val Pro  
145 150 155 160  
Val Leu Glu Ala Leu Cys Leu Ser Gly Gly Arg Tyr Trp Ser Tyr Cys  
165 170 175  
Cys Pro Asp Ala Arg Cys Cys Pro Ala Glu Gly Thr Ala Leu Thr Val  
180 185 190  
Pro Gly Thr Ser Val Met Ala Ala Ala Ala Thr Tyr Ala Gly Leu Arg  
195 200 205  
Val Arg Gly Ser Leu Gln Glu Ile Glu Gly Arg Leu Ala Pro Leu Arg  
210 215 220

Gly Pro Leu Ala Asp Glu Gln Glu Arg Ser Leu Asp Leu Ala Ala Thr  
 225 230 235 240  
 Ala Leu Val Pro Lys Ile Leu Asp Gly Ala Thr Arg Glu Asp Val Gly  
 245 250 255  
 Ala Asp Thr Leu Glu Leu Ala Arg Thr Leu Met Arg Arg Leu Thr Leu  
 260 265 270  
 Ala Pro Pro Ala Asp Gly Gly Pro Cys Ala Glu Asp Trp Asp Asp Ala  
 275 280 285  
 Leu Leu Gly His Asp Glu Ala Ala Ser Leu Ile Leu Gly Leu Gln Asp  
 290 295 300  
 Arg Glu Ile Arg Asp Ile Ala Ala Glu Trp Met Glu Gly Glu Glu Ala  
 305 310 315 320  
 Ala Pro Ala Leu Arg Leu Trp Arg Ala Leu Ala Arg Arg Cys Val Gly  
 325 330 335  
 Ala Tyr Gly Glu His Ala Ala Ala Pro Leu Thr Leu Ala Gly Trp Val  
 340 345 350  
 Ser Trp Ser Thr Gly Asp Glu Pro Thr Ala Arg Ile Ala Leu Gly Met  
 355 360 365  
 Ala Leu Arg Ala Asp Ala Asp Tyr Arg Phe Ala Gln Leu Leu His His  
 370 375 380  
 Ala Cys Asn Glu Gly Ile Asp Pro Glu Gly Leu Arg Glu Cys Leu Arg  
 385 390 395 400  
 Ala Glu Arg Gly Arg Arg Glu Pro Arg Arg Ala Arg Ala Ala Val  
 405 410 415  
 Thr Arg Pro Pro Gly Arg Arg Pro Arg Thr Thr Arg Pro Ala Pro Arg  
 420 425 430  
 Asp Arg Arg Arg Thr Ala Gly Ser Glu Gln  
 435 440

<210> 78

<211> 1329

<212> DNA

<213> Streptomyces aizunensis

<400> 78

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 gccgccgact cacagatcac cctgcgcgagc ccggccgaac tggccgacgc cctgccctac 180  
 atgctcggct tccacccgac cgactccctc gtcattggtcg ccctgcacgg cgagggaggg 240  
 cgcttcggcg gccggctgcg ggctcggcatt cccaccgacc ggggggagtg ggaggacacc 300  
 gcccggcagg tcgccgactg cctggtgcac ggcagcgaac ggcgggcgcg caagcccgac 360



ggcatcgctcg	tcttcctctg	ccaggacccg	cgcgggcgggg	agagcgggca	gcgggtgatg	420
acccgggtgc	gcccgtctgc	ccagcgcac	aggctcgctt	gcggagcgct	ggacgtgccc	480
gtgctggagg	cgctgtgcct	ctccggcggc	cggtactggt	cctactgctg	ccccgacgcg	540
cggtgctgcc	cggccgaagg	gaccgccctg	accgtgcccc	gaacctcggt	gatggcgggc	600
gcccgcacct	acgccggact	ccgggtcagg	ggttcgctcc	aggagatcga	gggccgcctg	660
gcgcccctgc	gcggaccgct	cgccgatgaa	caggagcggt	ccctggacct	ggccgccacc	720
gcgctcgtag	cgaagatcct	cgacggagcc	acccgggagg	acgtgggcgc	ggacaccctg	780
gaactcgccc	ggacctgat	gcggcgccct	accctcgccc	cgcccgcgca	cggcggggccc	840
tgcgccgagg	actgggacga	cgcgctcctc	ggacacgacg	aggcggcctc	cctcatcctc	900
ggcctccagg	accgcgagat	cagggacatc	gccgcggagt	ggatggaggg	cgaggaagcc	960
gccccggcgc	tgcgtctgtg	gcgcgccctc	gccccggcgt	gcgtcggcgc	ctacggagag	1020
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gagcagtga						1329